

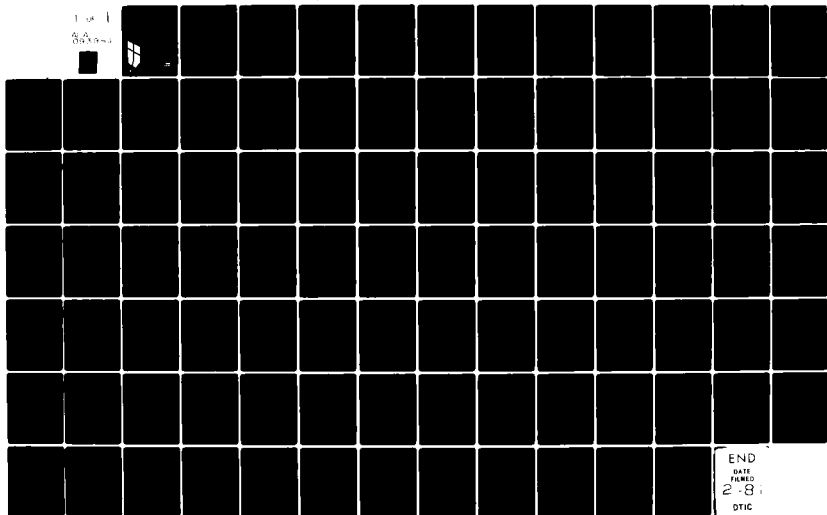
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TECHNICAL REPORT P-116
November 1980

DEVELOPMENT OF PERFORMANCE INDICATORS
FOR THE SELECTION AND PROMOTION
OF CORPS MANAGERIAL TALENT

by
W. D. Veneklasen

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The second area is relevant to the candidates for an open position or promotion and obtains specific information about performance characteristics. Three separate procedures are described for gathering such information: peer rankings, ratings by immediate supervisors, and ratings by second-level supervisors.

The third area is also relevant to the candidates but involves information about personal characteristics. Again, three separate procedures are described: the Biographical Inventory: Form V2, the Biographical Sketch, and the Interviewing Guide.

The fourth area concerns the total organization and the job's place within it. This information is provided by the Management Audit Survey, which assesses the organization's climate by surveying all employees.

These instruments have been developed over the past 3 years, and pilot data have been collected. The procedures are now ready for field testing.

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FOREWORD

This research was conducted for the Directorate of Military Programs, Office of the Chief of Engineers (OCE), under Project 4A161102AT23, "Basic Research in Military Construction"; Task A, "Technology for Military Facilities"; Work Unit 004, "Evaluating Individual Performance in Military Construction." The applicable QCR is 3.04.005. The research reported here was conducted from June 1976 to November 1979 by the Facility Systems (FS), U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL. The OCE Technical Monitors were Frank Parker, DAEN-MPC-E, John J. Sheehey, DAEN-ZCP-P, and Joyce Brunsell, DAEN-RMI-F. The Principal Investigator at CERL was Dr. Wayne D. Veneklasen.

All contractual support for this work was provided by the Institute for Behavioral Research in Creativity (IBRIC), 1570 South Eleventh East, Salt Lake City, Utah. The IBRIC researchers were Drs. Robert Ellison, Clifford Abe, and David Fox. The high level of understanding and insight of the IBRIC staff were crucial to the superior quality of the work they completed.

Special appreciation is expressed to Mr. John J. Sheehey, for his foresight in recognizing the need for research of this type, and for his personal commitment to a project which he wholeheartedly supported. Without his support and commitment, this research contributing to improving the Corps management talent would never have been completed.

Program review of the work and report were provided by Mr. Ed Lotz, Chief of FS, and Mr. Robert L. Porter, Team Leader of the Habitability Team. COL L. J. Circeo is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.



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DEVELOPMENT OF PERFORMANCE INDICATORS FOR THE SELECTION AND PROMOTION OF CORPS MANAGERIAL TALENT

1 INTRODUCTION

Background

The Army Corps of Engineers has traditionally been concerned with developing effective personnel selection and promotion procedures, but only recently has substantial work been done to develop and evaluate procedures for identifying and training managers early in their Corps careers. With increased demand for technological innovation and development, the Corps must persevere in this emphasis on the selection and promotion of its leadership.

In the past, problems have arisen occasionally when a person -- who apparently had the proper background, skills, or training -- was chosen for a managerial position, but failed to function effectively in the job. Typically this happens when a person is promoted because of experience and technical competence, but lacks the ability to perform managerial duties. Since choosing the wrong candidate can adversely affect not only that individual, but also the entire organization, better selection and promotion decisions may improve organizational performance by permitting employees to work with more effectiveness and with less stress and dissatisfaction.

Thus, the research reported here evolved for two reasons. The first was the Corps' continuing concern with maintaining the quality of its managerial talent. The second factor is actually an extension of the first because the Corps has been developing and using selection and promotion techniques which have had varying degrees of success. Although these techniques have improved on previous efforts, they still have major drawbacks: most involve assessing the performance of individual managers; assessments tend to be subjective; all ratings tend to be high; and the techniques reflect too many factors over which individuals have no control.

Objective

The objective of this study was to develop potential performance indicators that could be used in identifying and selecting top-level managers in the Corps of Engineers. The overall objective is to improve managerial effectiveness.

Approach

Before potential performance indicators could be developed, several interrelated issues were considered: (1) Was there a pool of highly qualified applicants from an effective career development program? (2) What kinds of activities were important for success in higher level jobs? (3) Could the appraisal system for observing and evaluating personnel performance be improved? (4) Are new procedures needed to stimulate higher levels of organizational performance?

To answer these questions, interviews were conducted with Corps personnel in one Division office, six District offices, and the Office of the Chief of Engineers (OCE). Interviewers talked with a wide variety of managers, developed and reviewed pilot forms, and collected pilot data. A total of 76 interviews were held, varying from 30 minutes to 2 hours in length (average about 1 hour). The interviews tended to focus on GS-14 and -15 personnel, but a number of GS-12s and -13s were also interviewed to obtain lower-level views. Interview results are reported in Chapter 2.

Information from the interviews was used to develop eight predictive selection and promotion instruments providing data in four areas. The first area focuses on the job itself and the activities of the position. Chapter 3 describes the Job Activities Description, a questionnaire providing information on the importance of and time spent on relevant job activities.

The second area is relevant to the candidates for an open position or promotion and obtains specific information about performance characteristics. Three separate procedures were developed to gather such information: peer rankings, ratings by immediate supervisor, and ratings by second-level supervisors (Chapter 4).

The third area is also relevant to the candidates but involves information about potential personal characteristics. Again, three separate instruments were designed: The Biographical Inventory: Form V-2, and Biographical Sketch; and the Interviewing Guide (Chapters 5 and 6). The fourth area concerns the total organization and the job's place within it. This information is provided by the Management Audit Survey, which assesses the organization's climate by surveying all employees (Chapter 7).

2 RESULTS OF INTERVIEWS

This chapter summarizes the interviewees' general concerns about selection and promotion, and their comments on the skills, knowledge, ability, and personal characteristics (SKAP) system, on specific selection strategies, and on the characteristics of a good manager.

The Existing SKAP System

The SKAP, a referral assessment system, is an Army-wide mechanism for identifying potential candidates for positions at GS-14 and above. To be considered for promotion or lateral transfer to such positions, any employees at GS-13 and above must have data in the SKAP system. Part of the data comes from assessments of the individual's past performance and potential generated by the first-level supervisor and reviewed by a higher level supervisor in the organization. Another portion of the SKAP data comes from the individual. The employee must fill out a form indicating his/her career goals, the types of positions he/she would be interested in having, and geographical locations where he/she would be willing to accept such positions. The individual also supplies personal background information, including past experience, and education and training. Once the SKAP has been completed by the careerist, the immediate supervisor discusses it with the individual employee to give him/her insights into his/her strengths and weaknesses.

After the SKAPs have been completed, they are reviewed and annotated by a Division or major command (MACOM) level review panel, and forwarded to OCE for review by an ad hoc Department of the Army (DA) panel. At each level, individuals' referral eligibility ratings can be adjusted. After final review and adjustments by the DA panel, the data on individuals are ready to be entered into the computer.

At any time, then, a computer run can be made to identify all the personnel in the Corps who are qualified for referral against a particular vacancy. Before a recruiting action, the supervisor for the vacant position and the local personnel office must indicate applicable referral categories and SKAP factor ratings, if appropriate.

Once all this information is input to the computer, the system can match the requirements for the vacant position with the qualifications of all applicants. This results in a list of potential candidates who theoretically meet the prerequisites for the position. The personnel office reduces the list to only those who express an interest in and availability for the vacant position by responding to a form letter. If more than 10 applicants are on the list, an ad hoc panel can select the 10 most qualified and forward that list to the selecting official. At this point, then, the supervisor responsible for filling the vacant position should have a list of highly qualified people from which to make a selection.

Reactions to the SKAP System

Those individuals interviewed who had experience on one of the review panels, and thus were most informed about SKAP, supported the procedure. The indication was that as more people are exposed to the workings of the system, SKAP will function better. But for the system to operate properly, the individual supervisors need to make fair, realistic, and accurate appraisals of persons being rated -- to allow this, a better understanding of SKAP is needed. For example, rotating the high-level people who serve on the review panels would expose more individuals to the system; workshops and visits to sites to review application materials and interview potential candidates would help promote more awareness and understanding of the system. The consensus, however, was that the system's operation had improved considerably since SKAP was introduced, overcoming to a limited extent the extremely inflated ratings which characterized the first year.

Some said that the OCE panel should not cut the long lists generated by the computer down to 10 or fewer, since if the system is working properly, all the engineers on the list should be equally qualified.

A problem with the SKAP system seems to be one of "management of forms." The backers of the system apparently feel that it is up to the individual to insure that his/her records are accurate and up

to date. However, many persons seem to lack adequate information; for example, when they fill out SKAP forms, they fail to realize the importance of the details of certain numbers and definitions on the forms. Some people did not become acutely aware of the importance of such details until they nearly missed out (or in fact did miss out) on a promotion because of erroneous data in the system. Again, this is probably largely a problem of educating people about the system. However, there were some indications that the procedures for updating and correcting information in the system might not be efficient. For instance, the personnel offices could take a more active role in keeping the personnel files updated. If computer personnel cannot do the necessary quality control checking, some procedure is needed to provide the personnel office and the individual employee immediate feedback on updates.

From the information gathered through interviews, a variety of suggestions for changes which might improve the operation of the SKAP system have been formulated. Some of these suggestions came directly from the interviewees; most were formulated from the interviewers' overall impressions.

1. Several people said there should be more human input to the system and not total reliance on the machine. One interviewee offered a specific idea: "When the various ad hoc committees go over the list of SKAP-recommended candidates, they should be able to add the names of qualified people to the list as well as take people off." A further suggestion, which was mentioned by a few people, was to return to filling positions by an ad hoc committee which discusses the available candidates and produces a list of those thought highly qualified. (However, such procedures could introduce to the system less objectivity and a lack of control.) This point of view illustrates how much information about the SKAP system is needed.

2. Apparently there has been a problem with people turning down jobs in a location they had indicated was acceptable. The possibility of taking punitive action against individuals who turn down such job offers has been considered. One supervisor said, "If you aren't sure you would take such a job, don't mark it on your SKAP. The procedure can take 3 to 6 months to get to the point of offering someone a position once it becomes vacant; therefore, I don't want to get to that point and have to start all over." Most employees, however, are very disturbed by this attitude. They feel they have the right to consider positions as they come up and should be able to mark location X even if they would only consider very few positions there. The employee can be fairly restrictive on the SKAP about what jobs he/she would accept, but still might consider a wider range of positions at one location than at another.

3. One objective of the SKAP system was to increase effective discussion between supervisor and subordinate concerning job duties, behavior, and career development. While this goal may be met with varying degrees of success, a frequent complaint was that it does not include performance feedback or appraisals. To promote such discussion and increase the objectivity of SKAP's information, one interviewee suggested a dual performance appraisal involving the supervisor and a personnel professional. He knew of a large industrial firm which uses this strategy. The outside professional introduced more objectivity into the procedure and was adept at counseling and career development.

4. Another suggestion was that independent performance ratings be obtained from first- and second-level supervisors, who would then discuss and resolve any differences in these ratings before the results were discussed with the employee. Typically, such ratings have a somewhat modest level of reliability, approximately in the .60s. Nonetheless, the ratings could permit the accumulation of useful data for research on the reliability of ratings within the Corps, and could provide a valuable contribution to a training program on performance appraisals and personnel evaluation. Furthermore, such procedures would tend to produce more effective discussions between supervisors and more objective evaluations because differences would be obvious and would have to be resolved.

5. There has been a problem with supervisors rating nearly all people very high (M) on nearly all SKAP traits. For the M category, the descriptive statements of the various elements in Form 4428 specify near perfection, and not many people truly function at that level on more than a few of the elements. The descriptors were written to present such a level of functioning that only a few would be rated highest (M), with the rest dispersed across the other two levels (S and A). Workshops or other informative devices should instill in supervisors the idea that employees ought to be distributed across the three levels of performance for the various elements. Supervisors apparently believe now that anything less than the highest rating on any element is a condemnation.

6. One suggestion having real merit was to present, as part of the SKAP printout, a given supervisor's average ratings of his/her subordinates. This would help identify the very lenient supervisor who has employees, according to one interviewee, "that walk on water without getting their feet wet." These data, if not already in computer storage, could be obtained with minimal difficulty in any revision of the SKAP system.

7. An alternate method of dealing with ratings that are too lenient (or too strict) would be to have the supervisor enter on the SKAP record the employee's three areas of greatest strength and the three areas in which the employee has the greatest opportunity for improvement. This technique would force supervisors to think about the different levels of performance of individual employees, and the results could be keyed into the computer when the names of qualified people are screened for the list of potential candidates for open positions.

The SKAP procedures have evidently improved the degree of objectivity and documentation involved in promotions, though there is variability in the system's use. A number of individuals indicated that they used the information from the system to evaluate patterns of high and low ratings and interpretations of employees' written work. On the other hand, some supervisors indicated that they merely looked at the employee's absolute number of M ratings and publications.

The result is that too many people still distrust the SKAP procedures and want either to make their own decisions on the basis of their authority or to seek out new information from their own sources. One GS-15 commented, "I put very little emphasis on performance appraisals. They are simply too arbitrary. The flick of a pen makes a substantial difference in a person's career. The performance appraisal is a necessary evil. It is much easier to give higher ratings than to try to defend and work through lower ratings. In addition, the SKAP system tends to carry a loser." When this supervisor fills a position he tries to pick someone he knows and thus avoid any problems. This is a difficulty which is very hard to overcome. It is simply human nature to pick a known quantity and avoid problems rather than to use a system which can introduce unknowns to the decision making process.

Reactions from the field indicate that the SKAP system is not well understood. The primary misunderstanding is this: the SKAP system is not a performance appraisal system but is considered just that by many of its users, who are also uncertain about how the paneling process works, and about how lists of candidates are generated.

Selection Strategies and Ideas

Interviewees were concerned with maintaining flexibility and local autonomy in use of all selection procedures. This concern applied to the SKAP or any other system that might result from the current study. There was a general sense that someone in the District should get the position if he/she were equally or better qualified than outside candidates. Generally associated with this was the belief that "it is highly unlikely that in a District of this size there is not someone highly qualified for any particular position." This naturally aids continuity by moving people up through the ranks and is also an inherent part of morale in most healthy organizations; i.e., employees feel "there is a future around here." The individual supervisor's concern about being able to do what he/she wants -- without the constraints of general policies, personnel regulations, stopper lists, and Civil Service requirements -- was much stronger than the concern about reducing inbreeding. Even though most hiring officials talk about how desirable cross-training and mobility are, they generally want to fill a vacancy with people they know have proven ability. And they do not want someone who is an "unknown quantity" moved into a position. So even though the system says a person is qualified, some supervisors are not prepared to believe it. Therefore, most managerial jobs apparently are filled by a person who worked under that position; if that does not work, hiring officials are willing to look elsewhere in the District; and if that does not work ("highly unlikely," according to one respondent), to look beyond the District.

This is obviously a very complex situation since most individuals are only willing to give lip service to cross-training (including mobility) and the reduction of inbreeding. Some strongly worded directives, personnel policies, or selling programs will have to be established to overcome reluctance about bringing individuals in from other Districts. One guideline seems clear: if possible, some flexibility and autonomy in the use of selection tools -- SKAP, for example -- should be provided at the local level. Otherwise, supervisors probably will not accept the tools without an extensive training

program in which the instruments are thoroughly sold so their benefits are clearly recognized. In other words, the tools might not be used if they do not provide the option of selecting the candidate supervisors want. These comments about local autonomy and flexibility should be borne in mind as alternative selection procedures are described below.

Interviewing Procedures

Essentially everyone felt that an interview with final applicants not known to the selecting supervisor was necessary. A number of individuals were questioned about their interviewing techniques, which varied substantially. Only a small percentage of individuals used any systematic interviewing strategy. Since the number of people selected for high level management positions is relatively small, few supervisors gain much experience in filling such positions. Moreover, developing interviewing and other selection skills is difficult because of the large time span between vacancies. Some sort of systematic interview could be of substantial benefit. However, since so many unstructured procedures have been employed, the interview is the most widely used ineffective selection procedure available -- and that assessment is probably especially applicable to the Corps. One individual reported that the interview for the selection of a high-level supervisor is sometimes a very brief affair, as short as 20 minutes. Others reported using no interview guide or pre-identified questions for the interview; they wanted a chance to "react spontaneously" to the applicant and his/her experience. While a portion of any interview could -- and perhaps should -- be unstructured, an effective interview should contain key questions established beforehand -- that is, those questions concerning job requirements and experience.

Peer Nominations

The possibility of using peer nominations as indicators of performance was brought up by the investigators and discussed in the interviews. The reactions varied from uncertain acceptance to strong support. Most managers from the GS-13 through -15 levels would have worthwhile input about the managerial performance and potential of at least 30 percent of the other 13s and 15s in the District. Thus, a peer nomination and evaluation procedure appears very feasible for Corps use. In fact, such a procedure is now used by Standard Oil of New Jersey and other industrial firms. There is associated software that can be used to synthesize the data from a number of sources and provide a computer output of the results. Although the exact details of the procedure would have to be adapted to Corps requirements, the general system would work something like this:

Three meetings are scheduled in each District annually so that all supervisors (GS-13 through -15) can attend at least one. At each meeting those attending are given a deck of computer cards with the names of all 13s through 15s printed one per card. The supervisor then sorts the cards into two stacks -- those in or not in his/her functional division. Each of the two decks is then sorted further so that those individuals not known well by the supervisor are set aside. At this point, the supervisor has three stacks of cards -- those in his/her functional division well enough known to be ranked, those *not* in his/her functional division but well enough known to be ranked, and those not well enough known to be ranked. The supervisor then sets aside the last group and proceeds to rank those in the other two decks on overall management capability as defined for the supervisor on a handout sheet. Each of the two decks is arranged in rank order and secured. This entire procedure can be done quite rapidly -- especially after individuals become familiar with it. The cards are then fed into the computer program, which analyzes the data by maximizing the agreement between observers and developing a composite rating for each individual within and outside each division.

The advantages of this procedure are that it introduces additional objectivity into the system and does not rely strictly on the leniency or the accuracy of the immediate supervisor. Since the actual rankings by participating nominators are anonymous, there is additional objectivity in the results. And because the individuals doing the ranking all see the persons being ranked from different perspectives, there is considerably more breadth of input into the process than any one reader or ranker could provide. The combined peer nomination data can be used as another input to (not the determinant of) all selection and promotion decisions. Conceivably, such a procedure also could be applicable to other grades of personnel.

The Ad Hoc Process

With the ad hoc process, used at two of the locations visited, an ad hoc group -- usually composed of three individuals from outside the immediate chain of command for the open position -- evaluates the characteristics of available candidates for the requirements of the vacant position (for GS grades 14 and under). Typically, the first or second level supervisor for the open position establishes weights for various SKAP elements or other categories of job requirements. The group member then rates applicants on each of the categories, and the sum of the ratings multiplied by the weights assigned to each category results in a total score for the applicant. The results are then reviewed and a list of the three to five highest scoring applicants is given to the selecting supervisor. Since the ratings for each applicant are based on the information submitted, individuals from a selecting location usually had more information available in their folders and therefore had an advantage over applicants from the outside.

The ad hoc process can remove pressures from the immediate supervisor and allow a relatively objective group of supervisors to select the final candidates for a position. Overall, then, the process appears to have some important advantages. Most importantly, it increases the objectivity of the selection decision.

However, the ad hoc process might be improved in a number of ways. The process takes a substantial amount of time because group members have to study personnel folders and have extensive discussions. The process might be made more efficient with brief summaries prepared by the personnel office or by the applicant. These summaries would contain the key aspects of each applicant's background and experience relative to the position and could be used as a primary source of information for the evaluations. The summaries should be identified only with a social security number to increase the objectivity of the procedure. Another point of potential concern was the way categories for job requirements were established. There was some indication that this was an arbitrary and hasty procedure, completed without careful consideration of the key requirements for successful performance on the job. If applicants are selected on loosely defined, partially irrelevant characteristics, the whole procedure cannot efficiently match the best individual to the real job requirements.

One of the locations visited also used an ad hoc procedure for interviewing final candidates; individuals were interviewed by a committee using either structured or unstructured interview questions. The panel arrived at a consensus and presented the final ranking to the selection supervisor. The recommendations of the panel were essentially binding on the selecting supervisor, who had to pick the top person on the list unless there was a substantial reason for not doing so. Although this process helped reduce the emphasis on a single interviewer's results, such use of the interview was inefficient, in contrast with what might have been accomplished by a well planned interview procedure. Nonetheless, because of its breadth of impact from a variety of sources, the process appears to have a marked advantage over interviewing by a single supervisor.

Characteristics of a Good Manager

In a number of the interviews, the participants were asked to list the qualities of an effective Corps manager. An alternate procedure was to ask for a description of the most and least effective manager the participant had ever known. These questions generated a long list of characteristics from which some key behaviors and attributes of effective managers could be identified. Such information typically is difficult to work with because it usually consists of a long list of laudatory adjectives which are difficult to translate into practice. On the other hand, the responses do produce a number of clues that can be related to various selection strategies. Furthermore, an overall view of effective managers' attributes, as seen by people in the field, was important to the study.

Table I summarizes the various responses and shows that characteristics were organized in three overall categories: managerial skills, personal characteristics, and technical background. The overall image appears to be that of someone who is perceptive and alert, displaying energy and commitment. The effective manager is seen as one who builds people in the long run instead of using them in the short run, and thus must be primarily oriented toward people rather than facts or projects. Such a person is involved in a wide variety of activities and looks for opportunities to challenge his/her subordinates.

While Table 1 presents information in general categories, many of the more specific characteristics mentioned have been incorporated into the interview guide discussed in Chapter 7. The information obtained from this part of the interviews could also supplement the biographical items discussed in Chapter 5.

Concerns of the Interviewees

Several individuals voiced concerns about this study; that is, what was its direction and what products might result from it. One concern was that the study should not result in an early identification procedure that would classify personnel as "peons" or "fair-haired boys" who are destined to move up to high-level positions. Individuals felt that such a procedure removes the incentive to produce and would not be a fair process continually sensitive to individual performance and potential.

Another concern was that the study might produce more paperwork for managers and employees. People felt they presently had to spend too much time on paperwork of no real value. They were concerned that a long and complicated rating form for everyone would add to their workload.

Table 1

Characteristics of Outstanding Managers

Managerial:

- Communication Skills -- oral (with employees, clients, contractors, etc.) and written
- Broad Perspective -- seeks information from as many sources as possible
- Results Orientation -- interest in high standards, not techniques
- Willingness to Delegate Responsibility and Back Up Employees
- Ability to Motivate and Stimulate People
- Concern about Career Development of Employees
- Effective Analytic and Decision-Making Skills
- Ability to Accept Responsibility and Back Decisions from Above

Personal

- Integrity-Honesty-Fairness -- respected by coworkers and subordinates
- Dedication-Involvement-Responsiveness -- evidence of high commitment
- Interpersonal Skill-Sensitivity-Tact
- Motivation to Achieve -- compulsive worker

Technical:

- Breadth of Experience -- including field, District, Division, OCE, and perhaps other organizations
- Competence in Specialty and Related Areas

Others were concerned about what seemed to be an additional layer of constraints which would inhibit their freedom to act as they thought best for their position and the Corps. Constraints that are applied universally would not be well received in the field unless their need were thoroughly explained.

One individual's thoughts summarize the concerns of the interviewees:

1. "Be careful that all forms and procedures do not become dehumanizing."
2. "Above all, the system must be fair and honest."

Role of the Interview Data

After the months of interviewing and discussions, the information obtained was organized into a general framework which guided the following 2 years of research. Figure 1 illustrates the conceptual framework: for any selection or promotion, an opening has to exist; to fill that open position, the requirements of the position must be determined so that candidates can be screened as the selection process begins; all these steps take place within the organization where the opening exists and the selected individual has to perform.

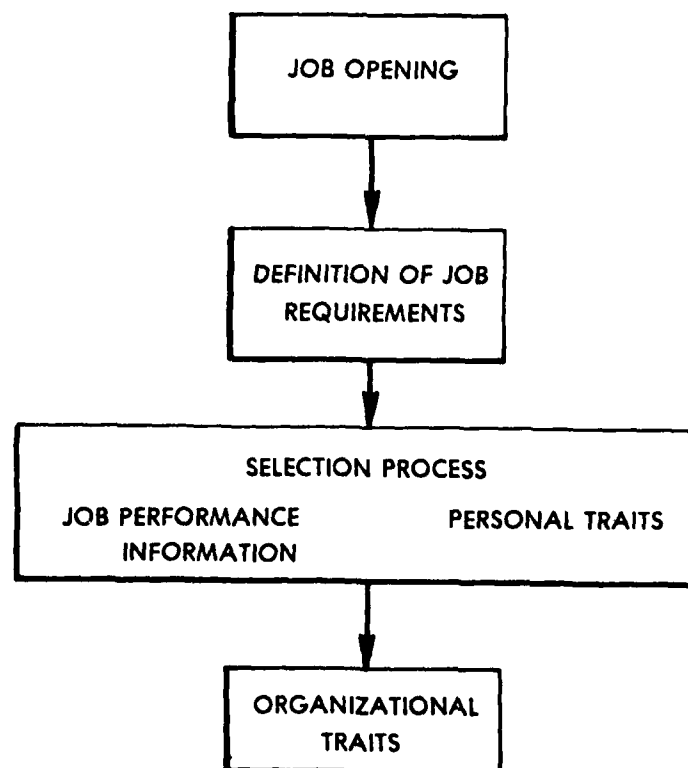


Figure 1. Conceptual framework.

3 JOB ACTIVITIES DESCRIPTION QUESTIONNAIRE

Development of the JAD Questionnaire

The Job Activities Description (JAD) Questionnaire was developed to gain information from engineers at the GS-11 level and higher concerning important job activities within the Corps of Engineers.¹ The rationale for the JAD was that engineering jobs at different levels emphasize different activities, which also vary in importance because the duties and responsibilities of the different levels vary. By focusing on the activities of engineers at each level within the Corps, this study could examine the job skills important for an engineer to function competently at the higher levels. Thus, the JAD analyzed management policies that were generally characteristic of key positions within the Corps.

Two possible uses of the JAD were envisioned as the instrument was designed:

1. The instrument, or a revision of it, potentially could be completed either by the incumbent of a position or the supervisor of a position that was soon to be vacant. The information obtained from either or both of these sources would provide specific data about key job requirements for the position. This information, in conjunction with data from other sources, could be used during the selection process to help match the characteristics of the individual to job requirements.

2. Certain trends in JAD results showed that the duties of engineers at the GS-11 and GS-12 levels are different from those of engineers at GS-13 through -15. So if certain job characteristics or duties were related to a particular GS level, these activities could be evaluated -- in interviews, revised research instruments, personnel forms -- as part of the general selection process for all managerial positions at that grade. Thus, candidates would be assessed for their experience in, or knowledge of, the activities important to success in management jobs at a given GS level.

For the preliminary work on the JAD, a pilot questionnaire was designed and then administered to 394 engineers in GS grades 11 through 16 at three Corps District offices. Development both of categories describing job responsibilities and of specific activities within each category was not to imply that engineers cannot or do not contribute to the effectiveness of the organization in other ways. Rather, the JAD's general, discrete categories were constructed simply to have some value in selecting, training, and evaluating management. Results obtained from 394 engineers indicated strong relationships between GS level and the rated importance of job activities. Higher level managers, for instance, spent more time in activities related to training and motivating personnel than did GS-11s, and reported that these activities were of much greater importance to their job. However, results from this initial design and testing of the JAD were somewhat limited because only a small number of higher grade personnel (GS-15 and -16) were included.

Nevertheless, the pilot study pointed toward some important design revisions. For the JAD described in this report, the time scales were revised and a somewhat different set of activities within categories was used.

Objectives of JAD Revision

The general goal of the research documented in this chapter was to determine the refined JAD's usefulness for supplementing current personnel selection procedures. The JAD would both define activities important for success in higher level jobs, and indicate their differences from those in jobs at the journeyman level of GS-11. Specifically, the objectives of the study were to:

1. Ascertain the differences in time spent on selected job activity categories by different levels of management.

¹ For a complete discussion of JAD development, see R. L. Ellison, C. Abe, D. G. Fox, and W. D. Veneklasen, *The Job Activities Description Questionnaire: An Analysis of Time Spent on and Importance of Managerial Duties*, Interim Report E-157/ADA074175 (U.S. Army Construction Engineering Research Laboratory [CERL], September 1979).

2. Determine the relative importance of selected job activities across different levels of management.
3. Examine various job classifications for any differences in selected job activities.

Procedure

Form Development

The JAD benefited substantially from previous research, having been constructed on the basis of work reported by Hemphill and Mahoney.² These studies and others, such as the early work by Flanagan on critical incidents, focused principally on the many activities of managers and on how jobs differ within and across organizations.³ Obviously, a number of different, complex activities are characteristic of managerial positions, and these early studies documented this complexity. Such studies have important implications for training and for assessing job performance since they indicate that a great variety of skills and abilities is required for competence as a manager. These studies, however, did not indicate how managerial positions should be evaluated and did not describe the nature of managerial positions at different levels of the organization. Also, no information was available on how Corps managers may be different from managers in other organizations.

For the pilot form of the JAD, 10 categories of job behaviors were selected -- on the basis of the earlier research and interview results -- as relevant to Corps activities. Within each of these 10 categories, at least three specific job behaviors were included to pinpoint the actual nature of what Corps managers do. Managers at different levels evaluated their jobs on each of the behaviors by indicating both the amount of time spent on each activity and the importance of each activity to success in their particular positions. The results indicated that very few differences existed in time spent across different levels of management. Such findings have been typical in other research studies as well.⁴ Of more value were perceptions by different levels of management about the relative importance of specific job activities.

This pilot work had a limited sample of higher level management personnel, particularly those at GS levels 15 and 16. In addition, further refinements were made in the design of both the categories and the specific job activities presented on the JAD form. These changes were made to improve the relationship between the categories and the different managerial levels, and to improve the sensitivity of the instrument to these different levels.

One concern in the design of the JAD was the provision of appropriate items so that lower GS level personnel could describe their positions by the amount of time spent on and the importance of the particular job activity. Including those lower level job activities, in some cases, was counter to the purpose of the questionnaire -- i.e., defining the job activities of higher level managers. However, excluding the categories through which lower level personnel could describe their positions would have been detrimental to the study and to the form. Thus, a number of job activities which were more characteristic of lower level personnel were written to provide an opportunity to describe these positions and thus detect differences between these and the higher level positions.

Figures 2 and 3 present the revised form of JAD used in the current study.

² J. K. Hemphill, ed., *The Engineering Study* (Educational Testing Service, 1963); J. K. Hemphill, "Job Descriptions for Executives," *Harvard Business Review*, Vol 37 (1959), pp 55-67; T. A. Mahoney, *Criteria of Organizational Effectiveness*, Mimeographed report (University of Minnesota, Industrial Relations Center, 1966).

³ J. C. Flanagan, "The Critical Incident Technique," *Psychological Bulletin*, Vol 51 (1954), pp 327-358.

⁴ J. K. Hemphill, ed., *The Engineering Study* (Educational Testing Service, 1963); J. K. Hemphill, "Job Descriptions for Executives," *Harvard Business Review*, Vol 37 (1959), pp 55-67.

The Job Activities Description will provide information about the kinds of activities that are required by certain positions within the Corps. The data will be very valuable in helping to define and understand the kinds of activities that are carried out by key Corps personnel. Ultimately, the information from this form will contribute to the future selection and placement of personnel into key managerial positions. Your cooperation in completing the form is greatly appreciated.

All data will be treated confidentially and anonymously. The information you provide in the section below will aid in the effective use of the data provided on the back of this page.

-
1. G. S. level _____
 2. Years of professional experience _____
 3. Current job title _____

Please indicate if you have had two or more years of experience in each of the following areas by marking yes or no on the line following each area. Please circle the number of the area in which you are presently working.

4. Civil Works _____
 5. Military Construction _____
 6. Engineering _____
 7. Planning _____
 8. Construction _____
 9. Operations _____
 10. Other _____
-

The back of this page is a form for providing information about the kinds of activities which are important for a person in your job. For each activity listed, please:

(a) use the scale on the left to indicate the approximate percent of time that you spend in each major category of activity printed in capital letters. For example, if you spend about 7% of your time in activities which could be classified under INTERACT WITH OTHER ORGANIZATIONS, you should write 7 in the blank to the left of that category. These percentages will not total 100, since some activities overlap and others are omitted.

(b) use the scale on the right to indicate how important it is for a person in your job to perform adequately in the specific activities within each category. For example, if "Organize work schedules" is a crucial job activity, write a 5 in the space to show this. When rating the activities, disregard the percent of time you have just indicated and how hard it may be to do the activity. Please rate all of the specific activities.

Figure 2. Job Activities Description: page 1.

PERCENT OF TIME	IMPORTANCE				
	Unimportant	Some Importance	Moderate Importance	Quite Important	Crucial
	1	2	3	4	5
_____ REVIEW AND EVALUATE PROJECTS					
Monitor project progress.					
Evaluate productivity measures and systems.					
Review cost accounting records.					
_____ ALLOCATE RESOURCES					
Budget program expenditures					
Allocate resources to projects and programs					
Prepare cost estimates for a project.					
_____ TRAIN AND MOTIVATE PERSONNEL					
Analyze training and developmental needs of subordinates.					
Guide personnel assignments and procedures.					
Provide for personnel development and recognition					
_____ INITIATE IMPROVEMENTS IN METHODS AND OPERATIONS					
Develop and/or implement new methods of operation					
Plan and initiate new organizational procedures					
Design new management procedures.					
_____ USE KNOWLEDGE AND SKILLS IN A TECHNICAL CAPACITY					
Solve various engineering and scientific problems					
Prioritize system requirements and objectives					
Act as consultant for solving technical problems.					
_____ INTERPERSONAL INTERACTION					
Help others resolve differences					
Stimulate cooperation among employees					
Provide feedback to subordinates about job performance.					
_____ INTERACT WITH OTHER ORGANIZATIONS					
Negotiate with outside organizations					
Develop cooperative relationships with clients, interest groups, etc.					
Keep up with current events through contacts with outsiders					
_____ SCHEDULE WORK OF ORGANIZATIONAL COMPONENTS					
Organize activities of others to respond to problems.					
Organize work schedules					
Establish project priorities					
_____ LONG-RANGE PLANNING AND CONTROL					
Participate in long-range planning meetings					
Investigate possible future developments and response options					
Develop long-range priorities					

Figure 3. Job Activities Description: page 2.

The measurement of time spent was requested only for the most general categorizations of job activities. In the first JAD study and other research, estimates of the percentage of time spent on specific job activities were so small that accurate measures were difficult to obtain; therefore, it was thought greater abstraction would provide more valuable data on time spent.⁵

On the other hand, previous research with JAD had demonstrated that the more specific the statement of the actual job activity, the more likely that the statement would differentiate between various levels of management performance. Thus, the specific job activities were rated for their importance to job success as in the previous form. This general format for collecting such data has the advantage of being both relatively simple and, as the results will reveal, sensitive enough to describe aspects of the management positions within the Corps of Engineers.

Data Collection

Although evaluating the same number of individuals in each of the GS levels would have been desirable, difficulties encountered during the course of study made this unfeasible. A sample of GS-11s through GS-16s was originally requested; because of the limited number of GS-15s and -16s, all personnel at these high management levels were to participate in the study to provide relatively stable estimates of the managerial job at these levels. The participants from GS-11 through GS-14 were randomly selected from the Corps Stratification Tape at the OCE Manpower Office. All Corps GS-15s and -16s in the United States were asked to participate. All participants were to return data anonymously by mail. After receiving JAD forms, participants were sent only one follow-up request for completion and return of the forms.

The final sample selected and analyzed during the study is described in Table 2. As shown in this table, the percentage return and absolute sample size is somewhat low for two of the GS levels -- 11 and 16. Better return rates were obtained for the levels where the individual enters into and is promoted up the managerial ladder, i.e., GS-12 through GS-15. Since the forms came from essentially all GS-15s and -16s within the Corps, the data should be generally representative of managerial positions

Table 2

Description of the JAD Sample

Job Level	Number Distributed	Number Processed	Percent Returned*
GS 11	80	44	59
GS 12	84	65	81
GS 13	79	54	80
GS 14	70	49	79
GS 15	272	162	65
GS-16	58	20	38
Total	643	394	68

*This column includes data received too late to be processed.

⁵ J. K. Hemphill, ed., *The Engineering Study* (Educational Testing Service, 1963); J. K. Hemphill, "Job Descriptions for Executives," *Harvard Business Review*, Vol 37 (1959), pp 55-67.

within the Corps, although some caution is justified in interpreting the results because of the moderate return rate.

Data Analysis

The data analysis procedures were relatively simple. When the data were received, all information was keypunched and mean scores for time spent were computed for each GS level. These mean scores were then compared to determine what differences, if any, were characteristic of the different GS level positions. These data were analyzed with an analysis of variance (ANOVA) program to determine the significant differences between the mean percent of time reported by the different managerial levels.

A similar procedure was followed for the importance ratings of the various job activities. The mean importance ratings were computed for each GS level, and these were compared for significant differences by the ANOVA program. In addition, some comparisons of certain job titles and of current job area (e.g., civil works, military construction, engineering, construction) were made.

Results

The Managerial Job Analysis of Time Spent

Instructions for the JAD advise the participant that not all aspects of managerial jobs are included on the form and that the various job activities are not necessarily independent (e.g., Interpersonal Interaction overlaps with Train and Motivate personnel). Nevertheless, the different categories of job activities do provide important information about how Corps personnel spend their time. The results of this part of the study are presented in Table 3, which shows the average percent of time spent by each of the GS levels on each of the major job categories included in the JAD. For example, all levels of managers responded similarly to Category 1, Review and Evaluate Projects. The average time spent on these activities varied from 14 to 18 percent, and there were no significant differences among the managerial levels as determined by the ANOVA test. In this case, "statistical significance" shown as $p < .05$ means that identical results would be obtained 95 times out of 100; $p < .01$ is 99 times out of 100.

Somewhat similar results were obtained for Category 2 -- Allocate Resources. Managers devoted less time to activities in this category; the average time estimates ranged from 7 to 12 percent.

Different levels of management did describe their jobs differently under the third category of job activities -- Train and Motivate Personnel. The mean percent of time spent on activities in this category varied from 4 percent for GS-11 personnel to 12 percent for GS-16s. These results indicate the gradually increasing scope of this activity as one proceeds up the management ladder.

Differences were also evident in the amount of time different levels of management spent on the next category -- Initiating Improvements in Methods and Operations. Although the differences were not marked, ranging from only 7 to 11 percent, they were statistically significant.

The category which took up the most time of Corps personnel was the Use of Skills and Knowledge in a Technical Capacity. The average GS-11 reported that he/she spent approximately 38 percent of his/her time on such job activities. By the time managers had reached GS-16, only 13 percent of their time was spent on these activities. These results indicate that less time is spent using technical skills as an individual is promoted up the managerial ladder.

Category 6, Interpersonal Interaction, showed that there was a tendency for higher level managerial personnel to spend more time in interpersonal interactions.

Category 7, Interactions With Other Organizations, did not differentiate among the various managerial levels on amount of time spent. The average amount of time spent interacting with personnel from other organizations varied from 12 to 17 percent.

Category 8, Scheduling Work of Organizational Components, required a relatively small amount of time (ranging from 6 to 11 percent) across all managerial levels.

Category 9, Long-Range Planning and Control, took up very little time of the GS-11s (3 percent), but an increasing amount of time as one progressed up the managerial ladder. At the GS-16 level,

Table 3
Percent of Time Spent on Different Job Activities
Across GS Levels

Job Activity Category	Significant	Average Percent of Time Spent at Each GS Level					
		11	12	13	14	15	16
1. Review and Evaluate Projects	No	14	14	16	18	14	15
2. Allocate Resources	No	7	9	11	9	10	12
3. Train and Motivate Personnel	Yes**	4	7	10	9	10	12
4. Initiate Improvements in Methods and Operations	Yes**	7	7	7	7	11	10
5. Use Knowledge and Skills in a Technical Capacity	Yes**	38	41	28	20	21	13
6. Interpersonal Interaction	Yes*	10	10	9	12	14	15
7. Interact with Other Organizations	No	15	13	14	12	14	17
8. Schedule Work of Organizational Components	Yes*	6	11	12	12	10	11
9. Long-Range Planning and Control	Yes**	3	5	6	8	10	13

* $p < .05$

** $p < .01$

approximately 13 percent of the time spent was on these activities. The results were highly significant in differentiating among managerial levels.

Charting the response patterns of three categories, under which the other six can be grouped, Figure 4 illustrates the relationships between GS level and percent of time spent on the JAD categories. In this figure, one category (Use Knowledge and Skills in a Technical Capacity) begins at a high level for the lower GS grades and decreases as the GS grade increases. This category deals with the skills that the engineer would learn in college and for which the engineer was first employed by the Corps. These skills, however, are used less as the engineer advances into management positions.

A second relationship is exemplified by the Review and Evaluate Projects category. Here, the amount of time spent is fairly constant across all GS levels. These, then, are skills that are needed when the engineer is hired and remain necessary as the employee progresses up the managerial ladder. Other JAD categories belonging to this group include Initiate Improvements in Methods and Operations, Interact with Other Organizations, and Schedule Work of Organizational Components.

The third relationship is exemplified by the Long-Range Planning and Control category. Other JAD categories belonging to this group include: Allocate Resources, Train and Motivate Personnel, and Interpersonal Interaction. The amount of time spent on these categories increases as GS level

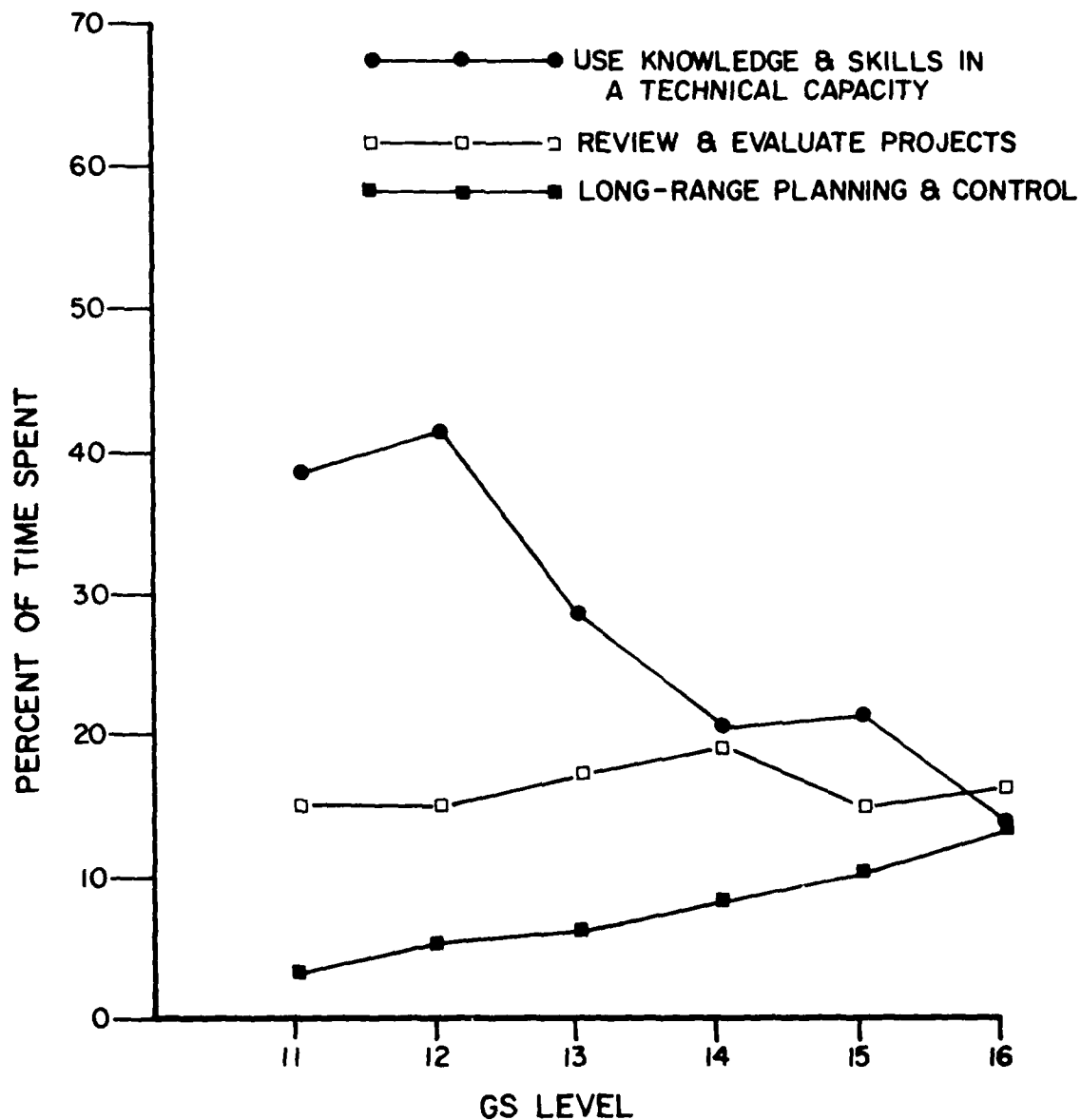


Figure 4. Percent of time spent on three example categories of activities by GS level.

increases. The categories in this group, then, could be the subject of training for the Corps employee, because the typical engineer would not be expected to have developed many of the skills necessary to perform these functions effectively. Experience and in-service training would be necessary to prepare the engineer to perform competently in these areas. Since the future of the Corps is at least in part dependent on how well these activities are carried out, it appears crucial that personnel systematically develop these skills.

Importance of Activities by GS Level

The analyses of the JAD data have indicated that certain activities are more important to Corps personnel at higher GS levels. The importance of the job activities to the GS levels is summarized in Table 4, which shows those activities rated very important by the personnel completing the survey. A

Table 4
Job Activities Rated as Very Important by Different GS Levels*

	GS Level					
	11	12	13	14	15	16
Review and Evaluate Projects						
Monitor Project Progress	X	X	X	X		
Evaluate Productivity Measures and Systems						
Review Cost Accounting Records						
Allocate Resources						
Budget Program Expenditures		X				
Allocate Resources to Projects and Programs		X	X	X		
Prepare Cost Estimates for a Project						
Train and Motivate Personnel						
Analyze Training and Developmental Needs of Subordinates						
Guide Personnel Assignments and Procedures			X			
Provide for Personnel Development and Recognition	X	X	X	X		
Initiate Improvements in Methods and Operations						
Develop and/or Implement New Methods of Operation						
Plan and Initiate New Organizational Procedures						
Design New Management Procedures						
Use Knowledge and Skills in a Technical Capacity						
Solve Various Engineering and Scientific Problems	X	X	X			
Prioritize System Requirements and Objectives				X		
Act as Consultant for Solving Technical Problems	X					
Interpersonal Interaction						
Help Others Resolve Differences		X	X			
Stimulate Cooperation Among Employees	X	X	X	X		
Provide Feedback to Subordinates About Job Performance		X	X			
Interact With Other Organizations						
Negotiate with Outside Organizations			X	X		
Develop Cooperative Relationships with Clients, Interest Groups, etc.	X	X	X	X		
Keep Up With Current Events Through Contacts With Outsiders						
Schedule Work of Organizational Components						
Organize Activities of Others to Respond to Problems		X				
Organize Work Schedules	X					
Establish Project Priorities	X	X	X	X		
Long-Range Planning and Control						
Participate in Long-Range Planning Meetings				X		
Investigate Possible Future Developments and Response Options				X		
Develop Long-Range Priorities				X		

* Military officers were omitted from the sample; however, they did occupy a majority of executive positions.

"very important" activity was operationally defined as one rated an average of 3.9 or above on the JAD importance scale. The "very important" was derived by combining the top two categories (1 = Unimportant, 2 = Some Importance, 3 = Moderate Importance, 4 = Quite Important, 5 = Crucial. Table 4 allows a comparison of the job activities which were common across the GS levels and summarizes the increased importance of different activities as the individual progresses up the management ladder. The table also illustrates a number of key issues with which this chapter has dealt.

For GS-11s or -12s, the only activity rated very important was Solve Various Engineering and Scientific Problems. If the jobs of the individuals holding these positions are restricted to engineering activities, then these individuals will not have an opportunity to develop skills that are so valuable for higher level positions. Equally or more important, without having an opportunity to develop those skills, engineers also will not have an opportunity to display them; and those skills are the very factors which should be the basis for selection to GS-13 positions.

Table 4 clearly shows that at the GS-13 level a number of new managerial duties are introduced, having been rated very important by the incumbents of that level. At higher GS levels, the job activities of importance tend to move away from strictly engineering-oriented activities and toward managerial functions. For example, activities in both Interpersonal Interaction and Train and Motivate Personnel were rated as very important for the first time at the GS-13 level. If GS-13 level personnel and higher have not had an opportunity to develop their talents in these new duties, then their performance will be less effective than it could or should be.

The table also shows that the selection of people for higher level positions should not be based only on previous job performance, but rather should be based on the individual's performance of activities that are important in a managerial job. And the JAD form, or a variation of it, can serve as an instrument to help define the managerial activities of an open position.

By the time individuals advance to GS-14, some additional activities of importance are typically added. These include: Budget Program Expenditures; Allocate Resources to Projects and Programs; Help Others Resolve Differences; Provide Feedback to Subordinates About Job Performance; Negotiate With Outside Organizations; and Organize Activities of Others to Respond to Problems. At GS-14, Solve Various Engineering and Scientific Problems was not rated as very important. The real transition from an engineer to a manager has clearly begun by the time the individual reaches the GS-14 level.

By the time individuals reach the GS-16 position, important job activities are even more varied. The activities concerned with Long-Range Planning and Control in particular were rated very important by the GS-16s, even though they had not been so rated by lower levels. Thus, sensitivity, awareness, and competence in these activities should be significant in the selection of GS-16s.

Only one category of activity was not rated very important by any GS level: Initiate Improvements and Methods in Operations. Since the activities in this category were concerned with organizational change, it seemed unusual that such activities were not viewed as more important -- particularly if it is assumed that continuing change will characterize future development of the Corps.

Five activities were rated very important by GS-13s through GS-16s -- in other words, important regardless of the level of the managerial job:

1. Monitor Project Progress
2. Provide for Personal Development and Recognition
3. Stimulate Cooperation Among Employees
4. Develop Cooperative Relationships With Clients, Interest Groups, etc.
5. Establish Project Priorities.

Table 4 does not necessarily highlight job activities that change rapidly in importance as one proceeds up through management (i.e., those activities that have the highest relationships to grade level). Although there were a number of specific activities with marked differences across grade level, those most likely to change in importance included:

1. Allocate Resources to Projects and Programs
2. Provide for Personnel Development and Recognition

3. Develop Long-Range Priorities
4. Investigate Possible Future Developments and Response Options
5. Provide Feedback to Subordinates About Their Job Performance.

Job Assignment Analyses

On the front of the JAD form, each respondent was asked to list his/her current job title (for example, civil engineer, electrical engineer, structural engineer, economist), his/her divisional assignment (engineering, planning, construction, etc.), and whether he/she worked in the area of Civil Works or Military Construction. The respondents were grouped into these various categories and their responses to the JAD analyzed to determine if there were significant differences in the amount of time spent on and the importance of the job characteristics.

These analyses were performed because interview results with Corps personnel indicated controversies about prerequisites, advantages, and limitations of various cross-training assignments. The results of the current study revealed that on the demographic measures examined, the job title, the divisional assignment, and the respondent's involvement in Civil Works or Military Construction were not differentiating factors.

Positions at similar levels within the Corps do have many managerial activities that are similar in importance -- at least with respect to the amount of time spent on them. Positions at different managerial levels (GS-11 vs GS-15 for example), however, are different both in the amount of time spent on specific activities and in the importance of those activities.

Job Activity Categories for GS-15s and -16s

This section analyzes the total group of GS-15s (N = 162) and -16s (N = 20) who responded to the JAD, and identifies skills necessary for performance at those levels.

In Table 5, the JAD categories are rank-ordered according to the average percent of time spent on each category by the GS-15s and -16s. In the second column, the average rate of importance of the JAD categories is presented. The numbers in parentheses represent the rank-order of the average importance.

Category 5, Use Knowledge and Skills in a Technical Capacity, was the unquestionable leader in percent of time spent for the GS15s and 16s: 20.1 percent. The next three categories are grouped rather closely: 14.1 to 14.3 percent. Then there is another sizable drop; the last five categories are within the range of one percentage point.

The Average Rated Importance column of Table 5 also presents some interesting findings. The relationship between average rated importance and percent of time spent was not high, which indicated that the priorities of the GS-15s and -16s were not well reflected in the amount of effort expended. That is, the category with the highest average rated importance -- Interpersonal Interaction -- did not have the most time devoted to it; of course, it is also one in which professional engineers typically have received little formal training. This category has been identified before as one in which opportunities for individual development should be provided, and one which should be carefully considered in the selection/promotion process.

The second and third most important categories -- Interact With Other Organizations, Train and Motivate Personnel -- are also definitely managerial in nature. These findings reinforce the idea that the best engineers may not be the most qualified for the higher GS level position.

These results from the JAD highlight the importance of carefully analyzing each job opening before the selection process. After this analysis, the individuals who can handle best the various activities of higher level positions should be selected. The person who has not developed managerial skills should not be encouraged to apply for higher managerial positions. Other methods should be considered for recognizing the talents of those who remain engineers -- for example, placing such individuals in divisional positions which may be more in line with their capabilities, rather than in managerial spots which may not match their abilities and interests. Selecting the wrong person for a managerial position could be detrimental to the individual, subordinate employees, and the Corps.

Table 5

Analysis of Job Activity Categories by Time Spent, and Average Rated Importance for GS Levels 15 and 16

Category	Percent of Time	Average Rated Importance*
5. Use Knowledge and Skills in a Technical Capacity	20.1	3.57 (6)
7. Interact with Other Organizations	14.3	3.85 (2)
6. Interpersonal Interaction	14.1	4.00 (1)
1. Review and Evaluate Projects	14.1	3.34 (8)
4. Initiate Improvements in Methods and Operations	10.9	3.52 (7)
9. Long-Range Planning and Control	10.3	3.80 (4)
3. Train and Motivate Personnel	10.2	3.83 (3)
2. Allocate Resources	10.2	3.30 (9)
8. Schedule Work of Organizational Components	10.1	3.73 (5)

*Numbers in parentheses represent rank order for rated importance.

The following basic issues are evident from data generated by the JAD:

1. Personnel at the higher managerial levels within the Corps generally cannot be specialists and function well. They must have abilities across all categories investigated. If a person wishes to spend his/her time primarily in a given specialty, then that person usually should not seek a managerial position.

2. The evidence suggests that even the GS-15s and 16s may think of themselves as engineers first and managers second. This is reflected in the high percent of time spent on category 5. The wisdom of the 15s and 16s spending this disproportionate amount of time on a category ranked sixth in importance appears questionable.

Summary and Conclusions

The Job Activities Description, a brief form to collect information about the importance of and time spent on various job duties, was administered to 394 U.S. Army Corps of Engineers employees at GS levels 11 through 16. The JAD focused on management practices that were generally characteristic of key positions within the Corps. The findings were:

1. The study clearly demonstrated the feasibility of using descriptions of job activities to help guide selection decisions. The importance of each of 27 activities was presented for the grade levels studied. At grades 11 and 12, no management activities were rated very important other than Use Knowledge and Skills in a Technical Capacity. At grade 13, eight activities were rated very important; at grade 16, ten activities.

2. The amount of time spent on various job activities also varied by GS level. In general, higher graded personnel performed manager-generalist roles, spending their time on many different activities.

Individuals at lower grade levels spent most of their time in a specialist role performing technical duties related to their specialty.

3. In addition to the general findings about the importance of, and time spent on various activities across grade levels, the activities description approach should be used to further define the most important specific job activities for each position opening.

4. Selection should not be based only on past performance, but should particularly emphasize the potential of candidates in performing those activities that are important in the open position.

5. Individuals at all grade levels should be given opportunities to develop and display their management potential. Such opportunities should then facilitate more effective selection decisions.

4 RANKING AND RATING PROCEDURES

Before the selection and promotion process for Corps managers can be improved, a better system for assessing the proficiency (i.e., referral qualifications) of current personnel is needed. The Corps now uses the SKAP system; but since there are problems with it (Chapter 2), this study has developed other procedures which are proposed for rating and ranking employees.

Performance Evaluation Rationale

Performance evaluation systems have several purposes, which fall into two broad categories: to assess employees' development needs and to aid management decisions regarding personnel. In the first category, evaluation activities are used to identify specific training requirements of individual employees, act as stimuli to insure that supervisors observe and coach their subordinates more closely, and help motivate employees by providing accurate feedback concerning work performance.

In the second category, evaluation activities are an indispensable part of any decision-making process regarding promotions, layoffs, and organizational rewards. Evaluation activities are also important as a reference base for research into various management actions.

As many as 90 percent of all companies have some kind of employee evaluation system.⁶ There is a strong trend toward results-oriented approaches -- such as Management by Objectives -- often in combination with the more traditional global or trait ratings of employees. The evaluation system can accommodate peer ratings, supervisor ratings, and committee reports at higher levels. Companies with manager replacement tables (lists of potential candidates) tend to have committees or panels handling the selection process. These committees may consider performance evaluation information, but apparently never as a sole criterion. Some of the larger companies use two or more different evaluation systems for different purposes. For example, one system may be designed to allocate organizational rewards.⁷ Another might provide opportunities for personal or professional development.

Evaluations focusing on each of the two purposes -- assessing development needs and aiding personnel decisions -- could be done separately, but the information provided by one should be available in any managerial decision concerning the other. Because of the evaluation's potential impact on an employee, feedback to the person being rated should be an important element of any performance evaluation system, yet has received only minimal attention. Furthermore, employees should receive feedback about their performance at any appropriate time, not just during formally mandated periods.

Employee performance can be measured in a number of ways. Some of the more common techniques include:

1. Essay appraisals, requiring the rater to describe the individual's strengths, weaknesses, and potential. These essay appraisals are usually not standardized and are very difficult to compare.
2. Rating scales, requiring the rater to assess the individual's performance and traits on a number of standardized scales.
3. Field reviews, requiring the rater to meet with other evaluators and a personnel-staff member to reach a consensus about the individual's ratings.
4. Forced-choice ratings, requiring the rater to choose sets of standardized statements that are most descriptive or least descriptive of the individual.
5. Rankings, requiring the rater to rank-order several individuals along a standardized dimension of performance.
6. Critical incidents, requiring the rater to keep a diary of specific instances of the individual's performance.
7. Work standards, requiring the rater to compare the individual's achievements with predetermined standards of performance. This is very much a results-oriented approach.

⁶ J. B. Miner and M. G. Miner, *Personnel and Industrial Relations: A Managerial Approach* (MacMillan, 1977).

⁷ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, Jr., *Managerial Behavior, Performance, and Effectiveness* (McGraw-Hill, 1970), pp 113-116.

8. Management by objectives, requiring the rater to meet with the individual to set goals and later evaluate whether those goals were achieved. This is also a results-oriented approach.

9. Assessment centers, usually requiring the individual to be sent off the job to a series of structured exercises and tests which evaluate his/her potential.

Each of these techniques has different advantages and disadvantages. Table 6 shows the recommended technique for a given purpose.

There is no one "best" performance evaluation system; rather, the choice of which is best depends on the system's intended use. However, all good evaluation systems have several common elements:

1. A clear statement of purpose. The purpose of the evaluation will determine what techniques should be used and how often.

2. A job analysis. A formal job analysis, such as the Job Activities Description, covers many elements of managerial performance -- elements determining activities that are important in different jobs. This information is used to help develop standards against which performance can be compared. Of course, job requirements are usually multidimensional and involve several different skills and behaviors. Because of this, and the need for the system to be accepted and considered fair, employees

Table 6

Recommended Evaluation Techniques for Different Purposes

(Adapted from W. Oberg, "Making Performance Appraisal Relevant,"
Harvard Business Review, Vol 50, No. 1 [1972], pp 61-67.)

Purpose:	TECHNIQUE							
	Rating Scales	Rankings	Forced-Choice Ratings	Field Reviews	Critical Incidents	Work-Standards	Management By Objectives	Assessment Centers
Provide base for management decisions rewards, promotions, etc	X	X	X	X				X
Identify potential, identify training and development needs	X		X					X
Prod supervisors to coach and observe more closely					X		X	
Motivate workers through feedback					X	X	X	
Reference base for personnel research		X						

incumbent in the position should be encouraged to offer suggestions as performance standards are developed.

3. Factors to be evaluated: outcomes, traits, or behaviors. Outcomes are the direct, ultimate concern of the organization: witness the increase in results-oriented evaluation. However, most outcomes depend on many factors, only some of which can be controlled by the employee being evaluated. Outcomes may also take a long time to become apparent.

Traits such as "enthusiasm" or "ability to communicate" are more immediate and are presumably more under the control of the individual. However, they are often only vaguely defined and, moreover, are almost always inferred from the person's actual behavior.

Actual job behaviors, on the other hand, are directly observable, clearly definable, and presumably related fairly closely to measurable outcomes. Behavior-oriented measures, such as coworker cooperation, are preferable to others and should be the measurement of choice. However, useful measures of outcomes or traits can be important adjuncts to those of behavior and should be considered for the different kinds of information provided.

4. Designation of the raters or evaluators. Careful consideration must be given to this element of the evaluation system. Generally, more than one rater should be available for each employee. Individuals can be effectively evaluated by their peers as well as by higher levels of management. Having multiple raters requires a method of collating the information about each employee.

5. Training for raters or evaluators. Ratings are found to be more accurate when the raters have received training. Therefore, training has an impact on the reliability of the system and should be routinely built into any performance evaluation system.

6. Criteria of performance. The evaluation system must measure comprehensive and relevant criteria of performance or employees will not accept the system. The validity of the evaluation system can be improved by the job analysis and by the input from the employees occupying a given position.

7. Extent of feedback. Feedback is generally desirable because it can help motivate employees; however, providing performance feedback can require a high degree of tact and interpersonal skill. Supervisors typically are reluctant to confront an employee and make negative comments about an individual's performance. Nonetheless, any evaluative system should require that employees receive feedback about their performance. Supervisors should be trained in offering feedback so that they can provide positive and constructive information that the employee can use in improving his/her performance.

8. Timing of evaluations. Evaluations can be time consuming if done too frequently, but they can also be ineffective if not done frequently enough. A suggested interval between evaluations is 6 to 12 months; however, if employees are highly skilled and specialized, and if tasks do not follow standard cycles, then employees themselves can request evaluation reviews on an unscheduled basis.

First-Level Supervisory Assessment

The criterion rating form to be filled out by first-level supervisors is fairly straightforward; Appendix A is an example of this document. All ratings for one employee are to be done on a single 8 1/2 x 11 in. sheet of paper. The first side of this form asks the supervisor to rate the employee on each of the five criterion dimensions. A paragraph defines each dimension, as shown in Appendix A. The supervisor can rate the employee on each dimension by placing a mark in the appropriate box on a five-point scale. The first point of the scale indicates that the employee is weak in the performance characteristic and would fall in the lower 10 percent of all employees. The second box indicates that the employee is marginally competent on the performance characteristic and would fall in the next 25 percent (i.e., the 11th to 25th percentile). The middle choice communicates that the employee is fully competent; this point on the scale should represent the middle 30 percent of all employees. The fourth choice would indicate that the employee is exceptionally competent, falling in the next 25 percent or the 66th through 90th percentile. The fifth choice would indicate that the employee is outstanding in this performance characteristic -- one of the top 10 percent of all employees. The supervisor is instructed not to let the employee's ratings on one dimension influence ratings on other dimensions.

The second side of the Immediate Supervisory Assessment Form lists the 24 SKAP elements. The supervisor is instructed to indicate the four elements on which the employee is the most highly skilled and the four elements on which the employee has the greatest opportunity for improvement. Historically, the ratings made on the SKAP form have had little variability; for the most part, employees have been rated fully competent. The procedure outlined above would force discrimination on the part of the supervisor, improving diagnostic sensitivity and making the assessment more useful to employees' career development.

Second-Level Supervisory Assessment

The final major criterion form for the study collects from second-level supervisors ratings on three of the five performance characteristics. Results from pilot use of this form at the Sacramento District show that collecting independent assessments of performance from second-level supervisors is feasible and perhaps necessary. The current SKAP procedure requires that second-level supervisors only approve the ratings which have been made by first-level supervisors. The use of a form like that discussed below, or the independent ratings of subordinates by second-level supervisors on the SKAP form, provides a broader assessment base and additional reliability and validity to the entire rating process.

The Second-Level Supervisor's Rating Form (Appendix B) is somewhat more elaborate than that of the first-level supervisor. It allows for the ratings of up to 21 employees on a single form. With this instrument, the supervisor rates all employees on a single dimension before proceeding to ratings on the next dimension. This should decrease the likelihood that the second-level supervisor will rate certain employees high on all three dimensions. Each dimension corresponds to one page in the form, and a paragraph description tells the supervisor completing the form what the accompanying 11-point scale is to measure. Five points on the scale have a behaviorally based, one-sentence description of what performance at that level should indicate. A hypothetical breakdown of how a sample of 100 employees might be distributed across the descriptive statements is also provided to help guide the supervisor in discriminating among different levels of performance.

Peer Evaluation Rationale

Performance evaluation through the use of peer ratings was started by the U.S. Army's "Buddy Rating" system. Since that time, several arguments have favored such a peer evaluation system:

1. Coworkers are likely to perceive different aspects of performance than are supervisors. Behavior among coworkers is likely to be different and more "real" than behavior in the presence of a supervisor.
2. Coworkers are in a better position to perceive more behavior because they usually have more contact with the employee than does the supervisor.
3. Peer ratings can be used as a check on the reliability of performance ratings completed by the supervisor.

There is strong evidence that peer ratings are valid. Peer ratings in a training situation have predicted later promotion and performance appraisal results for middle-level managers with correlations in the .40s.⁸ In contrast, the ratings by the training staff were much weaker predictors. Peer ratings have had validities in the .30s and .40s in predicting success in training, promotion, and job performance.⁹ One author concluded that peer evaluations were useful in predicting later global ratings of success in managerial jobs within industry.¹⁰ In a study cited earlier by Campbell, et al., it was noted that the correlations between peer and supervisory ratings are only moderate, with peer ratings being

⁸ A. I. Kraut, "Prediction of Managerial Success by Peer and Training-Staff Ratings," *Journal of Applied Psychology*, Vol 60 (1975), pp 14-19.

⁹ R. E. Carlson, "The Current Status of Judgmental Techniques in Industry," in W. C. Byham and D. Bobin, eds., *Alternatives to Paper and Pencil Testing* (University of Pittsburgh, Graduate School of Business, 1973).

¹⁰ J. Weitz, "Selecting Supervisors with Peer Ratings," *Personnel Psychology*, Vol 11 (1958), pp 25-36.

more reliable predictors as time passes and the employee moves into different positions.¹¹ So in addition to the validity of the peer ratings, supervisory ratings and peer ratings appear to measure slightly different aspects of work performance. Whenever possible, ratings should come from more than one source -- the supervisor alone or the coworker alone would omit valuable information. A multi-trait, multi-rater matrix has been suggested to compare the ratings from different sources.¹²

Organizations have not used peer ratings extensively for two principal reasons.

1. There is considerable awareness that coworkers often view their peers as either friends or rivals. This could lead to systematic bias in the peer ratings since an individual could give high ratings to friends and low ratings to rivals.

2. There is a possibility for collusion -- coworkers could make deals to rate each other highly

Research on these two problems indicates that their impact is minimal. One author found that the reliability of peer ratings was typically high (in the .80s) and that the validities were unaffected by friendship patterns. Through experimentation, he concluded that the ratings received by an individual in one group would be about the same as the ones he/she would receive in another group.¹³ Other authors have also stated that the fears about these two problems are greatly exaggerated and that extraneous factors, such as appearance or friendship, will not invalidate the findings. These researchers decided that peer ratings can be used effectively even when the raters are aware that their ratings will have an impact on the ratee's career.¹⁴

Overall, the conclusion is that peer evaluations would serve a useful purpose and would be a worthwhile addition to the ratings by supervisors. The effectiveness of the peer evaluations could be partially dependent on personnel procedures allowing (or discouraging) job mobility across the organization. The more people in an organization who are aware of an individual's abilities, the more likely that reliable and valid measurements of work performance by coworkers can be obtained.

The Peer Ranking Process

In this procedure, described in Appendix C, all engineers and scientists at GS-12 and above would rank on two criterion dimensions -- Technical Competence and Communication Ability -- scientific and engineering personnel at GS-11 and above whom they know well enough to evaluate. All scientific and engineering personnel at GS-12 and above would be invited to attend a meeting. During the meeting, each person would choose a deck of randomly selected computer cards, each with the name of one individual at GS-11 or above.

The decision to use only the Technical Competence and Communication Ability criterion dimensions was based on several considerations: (1) of the five dimensions, these two are the most readily apparent to coworkers, (2) the ranking process is time-consuming, (3) more than two numbers on the ranking cards would be difficult to analyze given the possibility of the rankers' misplacing numbers on the cards, (4) given the historically high reliability of peer rankings, two were seen as sufficient, and (5) the supervisory ratings are used as reliability checks on the rankings by peers.

Figure 5 illustrates the sequence of events: the first step of the ranking process is for each person to take the deck he/she has received and sort it into two groups -- those whose performance is known well to him/her and those whose performance is not. Cards with names of subordinates and the card with the individual's own name on it are put with those not well known and discarded. The person then ranks those whose performance is well known from high to low based on his/her interpretation of their technical competence. After ranking the cards in order, the evaluator records on each the number corresponding to its position in the deck. The cards are then shuffled, and the process of ranking the

¹¹ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, Jr., *Managerial Behavior, Performance, and Effectiveness* (McGraw-Hill, 1970), pp 113-116

¹² E. E. Lawler, III, "Management Performance as Seen from Above, Below, and Within," *Journal of Applied Psychology*, Vol 51 (1967), pp 247-253; R. J. Klimoski and M. London, "The Role of the Rater in Performance Appraisal," *Journal of Applied Psychology*, Vol 59 (1974), pp 445-451

¹³ E. P. Hollander, "Validity of Peer Nominations in Predicting a Distinct Performance Criterion," *Journal of Applied Psychology*, Vol 49 (1965), pp 434-438

¹⁴ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, Jr., *Managerial Behavior Performance and Effectiveness* (McGraw-Hill, 1970)

cards and recording the position in the deck is repeated for an assessment of the employees' performance in communications. After this is completed, the decks are returned to the investigators for processing.

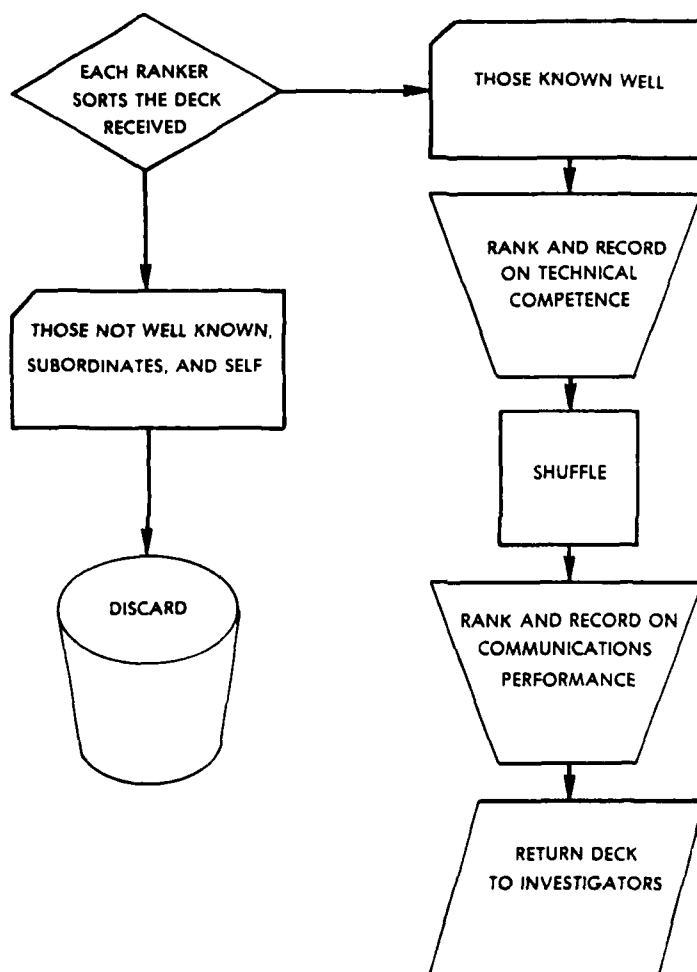


Figure 5. Ranking process.

Once all the data have been collected, they are organized for computer processing, which involves a variety of sophisticated techniques to distill from the full data matrix a single rating for each employee on each of the two criterion dimensions. This computerized technique obtains an average ranking per individual based on the data matrix, which has been adjusted to reduce the effects of atypical rankers and remove extreme rankings for each individual ranked. Another outcome of the computerized technique is an estimate of the reliability for the adjusted rankings of each dimension.

This process results in an acceptable number of rankings for each employee at GS-11 or above. Rankings by several evaluators -- rather than one or two -- produce data which are more reliable and therefore produce comparable results over time.

Criterion Data

The specific aspects of evaluation by immediate supervisor, second-level supervisor, and peers have been detailed on the previous pages. In an attempt to broaden the base for assessing performance, these three separate sources of information are used in the overall criterion package. The three sources provide rankings or ratings of an employee's performance on five dimensions (Table 7): Technical Competence, Communication, Decision Making, Innovation, and Coordination. Peers are required to rank only persons they know well enough to evaluate, while each supervisory form requests ratings on all employees.

When data collection is completed, all data provided by the various forms are keypunched onto computer cards to put the information in machine-readable form. The data are then organized into magnetic tape records at one record per individual employee. Each record contains the data based on peer rankings for two job dimensions, on immediate supervisor's ratings across all five performance dimensions, and on the second-level supervisory ratings for three performance dimensions.

To cross-validate portions of this package of evaluation criteria, three of the five performance characteristics discussed here are also content categories of the Biographical Inventory presented in the next chapter: Technical Competence, Communication, and Innovation.

Summary

Ratings by an employee's immediate supervisor are such a direct measure of job performance that they are unquestionably accepted as relevant and meaningful in describing the individual's job performance over a given time period. The supervisor is generally in the best position to observe and report

Table 7
Dimensions, Sources, and Methods of Criterion Data

Criterion Dimensions:	Source		
	Peers	Immediate Supervisor	Second-Level Supervisor
Technical Competence	Ranking	Rating	
Communication	Ranking	Rating	Rating
Decision Making		Rating	Rating
Innovation		Rating	Rating
Coordination		Rating	

on employee behavior; yet he/she often tends to inflate these assessments to avoid interfering with the careers of subordinate employees. The suggestions which follow are concerned with improving performance appraisal by providing objective, criterion-based information.

1. The immediate and second-level supervisors should independently rate subordinate employees on critical performance dimensions.
2. Peers should independently rank coworkers on job performance characteristics, a process which will counteract the leniency of supervisory ratings.
3. In time, performance appraisals should accumulate in a person's record. This information should provide a composite picture of a candidate's job performance (as evaluated by independent observers) under various conditions as the individual progresses on his/her career path.
4. The ratings and rankings should provide to each individual information on strengths as well as areas for self improvement.
5. All ratings by a given supervisor can be averaged so that ratings can be evaluated in the context of that supervisor's tendencies (i.e., excessively lenient, a "hard grader," or an objective observer).

Such a system has important advantages as a performance appraisal procedure. Specifically, a broader, more objective data base is available for each candidate. Evidence shows that peer rankings correlate with later promotion rates, which in turn reflect the organization's recognition of past performance. And the two supervisory ratings are objective and realistic when anchored to other criterion measures. As data from these three sources are synthesized during the selection process, the hiring official should be in a better position to choose the best individual.

5 THE BIOGRAPHICAL INVENTORY AND SKETCH

Biographical Inventory

A biographical inventory (BI) is a composite, multiple-choice instrument through which an individual describes him/herself and his/her background. The rationale for such an instrument is very simple: past behavior, experiences, and self-descriptions can be used as indicators of future performance. The items in a BI typically ask a wide variety of questions about a person's activities, experiences, sources of satisfaction and dissatisfaction, academic background, attitudes and interests, values, and self-descriptive evaluations. The scoring of a BI requires analyzing such biographical information for its relevance to a given criterion or to work performance.

CERL considered the BI to be a potentially important part of any battery of instruments used in selecting top-level management of the Corps of Engineers. Therefore, a BI was developed specifically for this study so that preliminary information about validating such an instrument could be collected. Although the data described in this report were collected on a separate BI, valid data potentially could be obtained simply with additions to existing personnel forms.

A number of studies have verified that use of a BI is one of the most promising ways to identify managerial talent. Campbell, Dunnette, Lawler, and Weick stated that there has been a considerable amount of research on predicting managerial effectiveness from biographical data, but that the use of biographical information in selecting managers and other high-level personnel needs to be increased.¹⁵

In several studies, Laurent reported the extensive research done by Standard Oil of New Jersey on early identification of management potential.¹⁶ These studies were designed to help answer two questions: how does one determine success in management, and how does one identify employees who have the potential to be successful in management positions? The first concern is the criterion problem; the second is the prediction problem.

These studies used biographical information forms and found that in both the United States and Europe, BIs were significant predictors (validities in the .50s) of managerial success. To validate these BIs, one of the criteria used in the studies was the Laurent Success Index (LSI), which is a score reflecting the relative degree of success each individual has achieved, considering his/her age, salary classification, and the company's salary classification policy. This index takes the individual's entire career experience into account but assumes that a promotion indicates successful performance at the lower job level.

The success that Laurent had with such a composite instrument led the investigators of the present study to seek out a possible composite against which the BI could be tentatively validated. The composite measure developed (peer nomination combined with promotion rate or salary level corrected for experience) was relatively sophisticated (though derived through a rather simple procedure), and could be used as a first step for validating the BI instrument.

Many forms of biographical inventories have been developed to predict an individual's job skills in industrial, governmental, and academic settings. Criteria examined for their biographical correlates have included leadership, creativity, communication skills, intelligence, technical skills, and artistic performance. Three industrial studies have examined the effectiveness of the BI in predicting scientific and engineering talent.¹⁷ Some of the criteria used in these studies included measures of creative performance (e.g., number of publications, number of patents, and supervisory ratings) and several aspects of job performance other than creativity (e.g., salary corrected for education and experience,

¹⁵ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, *Managerial Behavior Performance and Effectiveness* (McGraw-Hill, 1970).

¹⁶ H. Laurent, "Early Identification of Managers," *Management Record*, Vol 24 (1962), pp 33-38; H. Laurent, "Research on the Identification of Management Potential," in J. A. Myers, Jr., ed., *Predicting Managerial Success* (Ann Arbor, MI: Foundation for Research on Human Behavior, 1968); H. Laurent, "Cross-Cultural Cross-Validation of Empirically Validated Tests," *Journal of Applied Psychology*, Vol 54 (1970), pp 417-423.

¹⁷ R. L. Ellison, L. R. James, T. J. Carron, "Prediction of R&D Performance Criterion With Biographical Information," *Journal of Industrial Psychology*, Vol 5 (1970), pp 37-57; R. L. Ellison, L. R. James, D. G. Fox, and C. W. Taylor, *The Analysis and Prediction of Dow Scientific Performance* (Final report submitted to Dow Chemical Co., 1968); R. L. Ellison, L. R. James, B. W. McDonald, and C. W. Taylor, *The Prediction of Scientific and Engineering Performance With Biographical Information* (Final report submitted to North American Rockwell, 1968).

communication skills, group leadership, breadth of knowledge). The validities of the BI scales for predicting various criteria were highly significant and indicated that this approach could be used fruitfully in predicting the successful engineer.

There are many advantages to the biographical inventory approach:

1. It allows input from the individual, rather than subjective input from various supervisory levels.
2. It permits objective scoring, which does not rely on value judgments of the information.
3. It takes a short time to administer.
4. It uses an empirical scoring system developed for the Corps.
5. It produces reliable information because biographical data -- e.g., birth place, birthday -- do not change over time.
6. It has demonstrated its validity in previous studies which have shown the approach to be the best single predictor of future performance.

Pilot Testing

Form V was the first BI form built specifically for the Corps of Engineers and was the basis for Form V-2, which was tested in this study. For a description of the pilot form, its development, data analysis, and biographical correlates, refer to Appendix D.

Description of the Biographical Items

Of the 150 items in Form V-2, 39 were retained from Form V. From another BI (Form 0) administered at Dow Chemical Company, 21 items were used, and 90 completely new items were written specifically for this biographical inventory.¹⁸

Throughout the construction and development of Form V-2, the Civil Service Commission's (now the Office of Personnel Management) guidelines for selection devices were strictly followed. This meant that all items had to have either a conceptual relationship with actual managerial performance or a demonstrated statistical validity in the past.

The items in Form V-2 can be assigned to six content categories (Table 8) plus control scores:

1. Communication
2. Cross-Training Experience
3. Technical Competence

Table 8

Item Content Categories of the Biographical Inventory

1. Communication -- Assesses the experience and interest in activities such as writing (reports, articles, pieces for a school newspaper), editing, making speeches, etc.
2. Cross-Training Experience -- Assesses the breadth of experience in Corps activities across different functions (engineering, planning, construction, operations, research, etc.), districts or divisions, branches, etc.
3. Technical Competence -- Assesses the reported interest and ability as an engineer, how interested the person is in scientific fields other than engineering, how often others ask for help on engineering problems, etc.
4. Management Experience and Performance -- Assesses experience in those activities that typify managerial positions, such as reviewing and evaluating projects, allocating resources, interacting with other organizations, etc.
5. Innovation -- Measures the reported interest, involvement, and accomplishments in finding new approaches to problems and procedures.
6. Management Knowledge -- Assesses knowledge of management principles and practices.

¹⁸ R. L. Ellison, L. R. James, D. G. Fox, and C. W. Taylor, *The Analysis and Prediction of Dow Scientific Performance* (Final report submitted to Dow Chemical Co., 1968).

4. Management, Experience, and Performance
5. Innovation
6. Management Knowledge
7. Control Scores Which Include Age, Education, Experience, Minority/Nonminority, GS Level, and Supervisor/Nonsupervisor

Statistical Analysis

All items in Form V-2 were analyzed to establish their relationships with certain criteria, including peer ranking, immediate supervisors' ratings, second-level supervisors' ratings, and promotion rate. Figure 6 illustrates the statistics which were generated for each item alternative and each of the criteria. This statistical analysis allowed the construction of keys which produced scores predicting performance criteria.

Summary of Test Results

Based on the pilot data, the items which have produced significant relationships with the managerial performance criteria portray the effective manager as one who is experienced and comfortable in communicating with people on a direct basis, demonstrates a good deal of flexibility in working on several activities at one time, is quick-witted and able to think under pressure very well. Such individuals describe themselves as being more skilled in higher-order managerial activities rather than in detailed technical activities. Managers with high scores on the BI indicated that they liked to have a good deal of responsibility in their jobs and that they had a variety of work experience. These managers were interested and effective in instituting new policies, procedures, and usually demonstrated greater interpersonal skills; they generally reported that they were fairly effective in pursuing their managerial duties and demonstrated maturity of judgment about them.

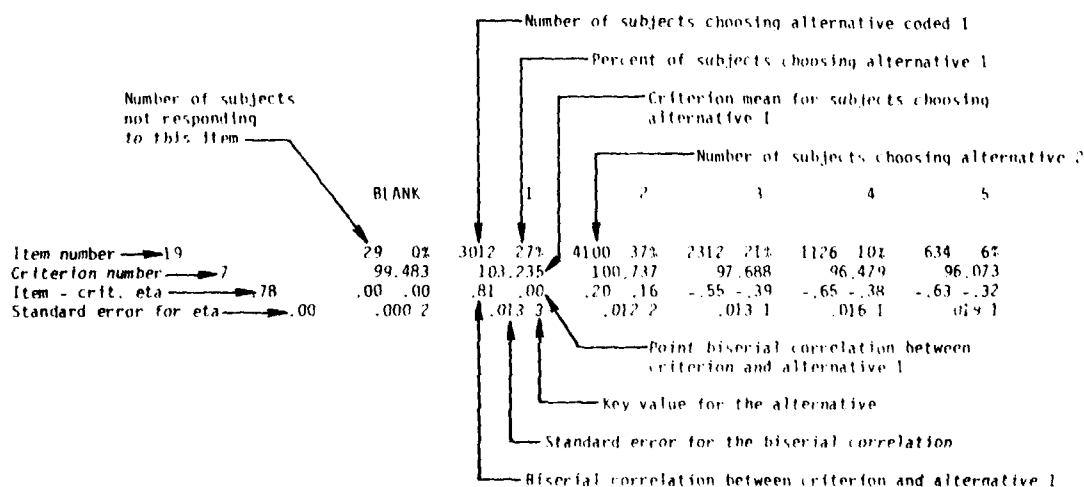


Figure 6. Example of item analysis printout showing location of various statistics.

Biographical Sketch

The Corps of Engineers now uses two forms for background information on the employee: Standard Form 171, and Form 2302. The forms are inconvenient to review because they are lengthy and complex. More important, neither form is a valid description of an individual's background, for neither contains complete information on a candidate.

The proposed Biographical Sketch was developed to solve these problems; it provides on one page essential information from all records in a personnel folder. This sketch is not meant to replace any existing forms but is a supplemental summary sheet.

Form Description

The Biographical Sketch (Figure 7) was designed to gather specific details about the respondent's activities and awards. The 12 items obtain information on age, GS level, entry level, time in grade, length of service, specific awards, and activities such as work on committees or special projects. The form could be made even more useful with two additional categories: Suggestion Awards and Professional Licensure.

Advantages of the Biographical Sketch

The data obtained are very objective and can be easily verified from personnel records. The form is easily completed, quickly reviewed, and relevant to the employee. Such a brief sketch would also have advantages for the ad hoc process. Because the amount of information for each candidate is fairly extensive, the ad hoc process takes substantial time from key people in an organization; the procedure would be more efficient if these brief Biographical Sketches were available to members of the committee. The Biographical Sketch should be identified only with a Social Security number to increase the objectivity of the procedure.

This form is part of the study on the development of performance indicators for managerial talent. All information will be used for research purposes only and will not be available to anyone. Answer the questions by making a check mark opposite your choice or by filling in the blank where appropriate.

1. Name: _____
2. What is your age? _____
3. What is your current GS level? _____
4. How long have you been at your current GS level?
_____ years
5. At what GS level did you enter the Corps?

6. How long have you been employed by the Corps?
_____ years
7. Have you won a Sustained Superior Performance Award?
____ A. No
____ B. Yes. Year of most recent award: _____
8. Have you won a Quality Step Increase?
____ A. No
____ B. Yes. Year of most recent increase: _____
9. Have you won a Special Act Award?
____ A. No
____ B. Yes. Year of most recent award: _____
10. Are you professionally licensed?
____ A. Yes. Year obtained: _____
____ B. No
11. Have you ever received an Outstanding Performance Rating?
____ A. Yes. Year obtained: _____
____ B. No
12. During the past three years, how often have you worked on a committee, special project, or special assignment, etc., that was not directly concerned with your technical work or specialty?
____ A. Not at all
____ B. Once
____ C. Twice
____ D. Three times
____ E. Four or more times
If any, list the two most recent:
(1) _____
(2) _____
13. In your past work, have you voluntarily learned to do some new, somewhat difficult, and relatively burdensome task, because you thought it was important to do so?
____ A. Almost never
____ B. Once in a while
____ C. Occasionally
____ D. Fairly often
Examples:
(1) _____
(2) _____
(3) _____

Figure 7. Biographical Sketch.

6 INTERVIEWING MANUAL AND GUIDE

The interview is one widely, but not systematically, used selection technique. Information gained through the interview may not be available from any other source, and the impressions of the interviewer can make a valuable contribution to effective personnel decisions. However, interviewing, though basically an exchange of information, is a complex skill requiring some sophistication and experience. For example, if three people are being interviewed for a position, each interview must be conducted similarly, with essentially the same questions being asked so that each applicant has an equal chance.

Because the selecting official often has had no training in effective interviewing techniques, an interview manual (Appendix E) and guide were developed to provide interviewers a framework for collecting relevant information. These tools should help maintain objectivity and increase the validity of the interview situation. The guide contains questions that can be asked during the interview; the manual provides instructions on use of the guide.

The interview manual and guide are quite general and can fit most interviewing situations for managers in the Corps. However, because of the subjective nature of the personal interview, any information gathered should be used only to supplement and verify information obtained from other sources.

Guide Development

Methods of interviewing were examined during the discussions with Corps employees conducted for this study; for example, how often were interviews used, what procedures were typically followed, and were there opportunities for improvement in this part of the promotion and selection system. Literature on the hiring process reports that the interview is one of the most widely used selection techniques.¹⁹ Invariably, supervisors and employers want to get acquainted with the applicant, provide essential information about the job, and generally size up the individual before making a hiring decision. However, there is little, if any, evidence validating the interview as it is routinely used in most organizations. At best, the validities, with only a few exceptions, tend to be modest. Interviews typically are most valid when they focus on observable behaviors or on questions that are easily interpreted and scored and are highly relevant to critical job behaviors. To be effective, then, the interview requires sophisticated procedures, trained interviewers, and/or effective instruments -- in short, it must be carefully prepared and conducted.

Given this general state of affairs, it was not surprising to find that there was a lack of systematic interviewing procedures, a wide variability in interviewing skills, and, therefore, room in the Corps for substantial improvements in this area of the selection process. Before the main data collection effort, interview procedures were tentatively explored, but only a limited amount of information was obtained. After this experience, a draft of an interview manual and guide was written so that potential users of the procedure could offer comments. Although the guide was only a preliminary version, suggestions for improving it were few. In general, managers within the Corps had not seen such a guide before and were reluctant to comment on interview procedures which were so unfamiliar. Thus, there was little involvement and input from those asked about how the procedure might be improved. Nonetheless, the interview manual and guide were revised with the information available.

Using the Interviewing Guide

The Interviewing Guide can be used by individuals or in group interviewing situations. In any case, as interviewers receive more training and gain experience with the Guide, the result will be more reliable and valid information and a better selection procedure for higher level personnel in the Corps of Engineers. Some of the areas covered in the Interviewing Guide are listed below.

¹⁹ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, Jr., *Managerial Behavior, Performance, and Effectiveness* (McGraw-Hill, 1970)

For all applicants:

1. Involvement with special groups, professional societies and community organizations.
2. Implementation of directives of higher level supervisors.
3. Work performance feedback to subordinates.
4. Leadership style of applicant.
5. Establishing a climate for innovation.
6. Delegating responsibility to subordinates.
7. Approach to communications between management and employees.
8. Promotion of coworker cooperation.
9. Unusual or outstanding achievements.
10. Possible strengths and weaknesses in managerial skills.
11. Aspirations and expectations of the applicant.

For applicants for GS-14 and -15 positions only:

1. Making personnel assignments.
2. Plans for personnel development.
3. Determination of training needs of subordinates.
4. Experience in using the team approach to management.
5. Approach to planning.
6. Maintaining high standards of productivity and performance.
7. Emphasis placed on each of the following activities:
 - a. Reviewing and evaluating projects.
 - b. Allocating resources.
 - c. Training and motivating personnel.
 - d. Initiating improvements in methods and operations.
 - e. Using knowledge and skills in a technical capacity.
 - f. Interpersonal interactions.
 - g. Interacting with other organizations.
 - h. Scheduling work of organizational components.
 - i. Long-range planning and control.

The Scoring System

The scoring system is not complicated, and Corps personnel should be able to use it easily. Here is an example of how an individual question could be scored:

Q: How much self-initiated training that is nongovernment sponsored have you had since you left college?

- ☐ Technical
- ☐ Management, general
- ☐ Management, specific skills
- ☐ Social science
- ☐ Other

Total ____

On this question, the applicant would respond with the kinds of self-initiated training that he/she has had, and the interviewer would make a check beside each type of training. The score for the applicant on this question would range from 0 (no training) to 5 (training in each category).

The basic advantage of this scoring system is that it gives applicants who have had diverse training or experiences more credit than those who have not. The system would make the interview more objective and more standardized across applicants; thus, the interview could become a more valid, and therefore useful, part of the selection process.

The Interview's Place in the Hiring Process

An interview should not be the critical determinant in any hiring process -- it should be considered only one source of information. Since the interview will inevitably be used at least in selected situations, improving that source of information and making the information obtained more relevant, accurate, and useful in hiring decisions is essential. But the most effective selection and promotion decisions will result from considering information from a number of sources.

7 THE MANAGEMENT AUDIT SURVEY

The Management Audit Survey (MAS) involves all levels of management in identifying and overcoming problem areas in the work environment to stimulate an organization-wide movement toward improved management practices, increased productivity, and higher levels of employee satisfaction. The MAS system -- initially developed for the Department of Labor -- has been under refinement for nearly 10 years; its potential use to the Corps of Engineers was first discussed in 1977.²⁰ Now, the feasibility study to determine whether the MAS would be useful for the Corps has been completed. This chapter describes the information provided by the system, the implementation of the system, and the preliminary results obtained after administering the MAS at three U.S. Army Corps of Engineers organizations.

The development of the MAS system was based on extensive research with Federal employees in the Department of Labor and the Treasury Department, and employees from the private sector.²¹ This research demonstrated that the MAS was reliable both in consistency within a score area and in the agreement among employees within a work group on their description of their work environment. The two studies by Ellison, et al., provided evidence that the MAS scores predicted organizational performance criteria relevant to human resource management.

The MAS system is a combination of a 100-item, employee-completed questionnaire, a computerized method for providing feedback to supervisors (Appendix F), a handbook to assist supervisors in developing programs for constructive change, and individual action plans to be completed by each manager or supervisor who receives feedback (Appendix G). The MAS provides quantified indications of managerial performance and organizational characteristics for areas which formerly could be assessed only in a limited or subjective manner. To avoid subjective assessments, the MAS was designed with an underlying behavioral emphasis. This emphasis aids development of programs for constructive change because the questionnaire itself contains descriptions of those activities which can lead to improvement of a particular management operation. Thus, the system provides both the impetus for a review of current management practices and an opportunity to revitalize the organization.

How the MAS System Works

With the MAS system, each supervisor with five or more employees responding to the survey form receives a computer-generated, diagnostic description of management practices and the work environment as defined by anonymous employee responses to the 100-item questionnaire. Higher level supervisors receive two reports, one based on the responses of the employees in the immediate work group and a second, consolidated report based on all subordinate employees. The system covers 19 key score areas relevant to human resource management and the quality of working life. A brief description of each of the MAS scores is presented in Table 9. The score areas cover aspects of managerial performance such as Fairness of Management, Delegation of Authority, and Supervisory Effectiveness; assessments of program effectiveness including Equal Opportunity for Minorities and Women; and areas more directly focused on the employee, such as Morale, Work Satisfaction, Opportunity for Promotions, and Satisfaction with Pay.

The employees respond to the MAS items on answer sheets computer-scored by the Institute for Behavioral Research in Creativity, which developed the system. This procedure provides the employee a further degree of anonymity because no one in the surveyed organization -- other than the respondent -- sees the answer sheet. As part of the processing, all the answer sheets are screened by a specially developed computer program (SPECTR) to remove distorted data; i.e., answer sheets that are too

²⁰ R. L. Ellison, C. Abe, and D. G. Fox, *The Development of Preliminary Performance Indicators for the Selection of Managerial Talent in the U.S. Army Corps of Engineers*, Final Report DACA88-77-C-0004 CERL, September 1977).

²¹ R. L. Ellison, C. Abe, D. G. Fox, and K. E. Coray, *Validation of the Management Audit Survey Against Employment Service Criteria*, Final Report No. DLEMA 1-71-93 (U.S. Department of Labor, June 1976).

Table 9

Description of the 19 MAS Scores

1. **Fairness of Management** measures how fairly employees are treated by management, whether fairness governs promotions and other job functions, and if adequate credit is given for work well done.
2. **Delegation of Authority** is a measure of the degree of definition of lines of authority and responsibility, including whether sufficient authority is given employees to plan their work independently.
3. **Supervisory Effectiveness** measures the overall effectiveness of supervision, the supervisor's specific influence on the performance of employees in the unit, and the quality of supervisory review and follow-up.
4. **Planning and Administrative Efficiency** measures the overall effectiveness of planning and the level of efficiency within a unit. Amount of unnecessary paperwork, amount of time wasted because of poor planning, and rules and procedures that facilitate or inhibit performance are all a part of this score area.
5. **Climate for Innovation** reflects the number of discussions held on new ideas, methods and ideas, the manner of receiving new ideas and the follow-up treatment of suggestions for methods or approaches to the work. It is a measure of the general openness to new ideas and methods.
6. **Work Satisfaction** measures the degree of interest and pleasure offered by the work, the opportunity the work provides for accomplishment, and the degree of satisfaction obtained from the work itself.
7. **Training Effectiveness** measures the effectiveness of on-the-job training, new employee training, and training for new work methods and procedures. Effectiveness in recognizing training needs is also measured.
8. **Performance Feedback** is a measure of the quantity and quality of the work performance discussions held with employees. It assesses the number of times work performance is discussed with an employee, the amount of useful information that is conveyed, and the employee's reaction to these discussions.
9. **Equal Employment Opportunity for Women** assesses whether women have the same opportunity as men to be hired and promoted, to receive training, to become supervisors, and evaluates the general level of success of equal opportunity programs for women in the organization.
10. **Equal Employment Opportunity for Minorities** assesses the same dimensions of employment opportunity as those measured by number 9 above, with the focus on minority group members.

Table 9 (Cont'd)

11. **Opportunity for Promotion** measures promotion opportunities within and upward from the work group, to specific lines of work and whether existing opportunities encourage employees to stay with the unit and work hard for promotion.
 12. **Downward Communication** assesses effectiveness of downward communication by examining whether employees know what results are expected from work assignments, whether the advance notice is given of changes, whether explanations of changes are given, and whether the employees are generally kept well-informed.
 13. **Upward Communication** measures management's willingness to consider ideas and problems of lower level employees. It measures the degree of interest in and awareness of employee attitudes, problems, and ideas.
 14. **Satisfaction With Pay** is a measure of perceived adequacy of pay in relation to assigned work and compared to other similar jobs and the local cost of living.
 15. **Morale** measures whether employees compare their work group favorably with other groups as a place to work, see themselves as having a good future in the organization, and would stay with the unit if offered a similar job elsewhere at the same pay.
 16. **Physical Working Conditions and Equipment** is a measure of the quality of light, heat, air, equipment, supplies, work space, furniture, and cleanliness of restrooms and other facilities.
 17. **Co-worker Cooperation** assesses the amount of free information exchange between workers, the willingness of co-workers to assist each other, their ability to work together toward unit objectives, and the amount of unpleasant disagreement in the group.
 18. **Operational Efficiency** measures how well the group handles problems, difficult projects, and pressure, as well as meeting objectives and adapting new approaches to problems.
 19. **Workload Balance** measures the balance between the work to be done and the staff assigned to the work. This includes both over- and under-staffing.
-

incomplete, that are completed randomly, that are overwhelmingly positive or negative, or that vary little in their descriptions of organizational procedures. The program helps increase the accuracy and meaningfulness of the feedback reports.

The system provides two forms of feedback on the 19 score areas:

1. A percentile rank score compares the average scores of employees within a work group to the overall organization's average or to a major organizational component's average. With this procedure, a score above the 50th percentile is above average. For example, a percentile rank of 70 means that the average score of the people in the work group exceeded 70 percent of the scores obtained in the entire organization.

2. A percent favorable score is based on how often employees in the total organization and in large organizational components used favorable response options to answer the questions in each score area. This absolute score allows comparisons of large organizational components across scores to

provide information about areas most needing attention throughout the organization; e.g., Fairness of Management and Co-worker Cooperation may be typically viewed more favorably than Performance Feedback and Opportunity for Promotions.

With the feedback report, the supervisor also receives the Handbook for Supervisors, a 47-page booklet explaining the system. It includes an explanation of the two scoring procedures, a presentation of a sample feedback report, a description of each score area (this includes a score definition, key score interrelationships, a paragraph describing examples of outside factors that may affect the score areas, and behavioral suggestions for improving score performance), and an appendix which presents the items that are used to assess each score area.

Based on the feedback report about the relative strengths and weaknesses of management practices as seen by employees, the information provided in the handbook, and his or her own knowledge of the work environment, the supervisor -- with the aid of subordinate employees -- formulates an Action Plan designed to bring about higher levels of performance in those problem areas identified by the MAS system. The Action Plan should include six key steps in initiating and planning organizational change. These steps are:

1. The definition of a problem area.
2. A decision concerning the use of a task group to gather additional information and make recommendations.
3. A statement of new procedures, behaviors, and policies to be followed.
4. A statement of how the plan is to be followed up with feedback to insure the new activities are solving the problem(s) identified.
5. A designation of who has responsibility for the change process.
6. A statement concerning what resource people (personnel, training, management analysis), if any, are to be used to help resolve the problems.

Typically, the two or three score areas selected for action are those which are relatively low and which the supervisor can change. The Action Plans are discussed with the next higher level of supervision which does not have access to the actual score results *but can stimulate effective problem solving* at lower levels. The system is thus designed to initiate problem solving activities throughout the organization in a nonthreatening manner. Since the system is designed to be acted upon by line management, it provides a means for an organization, through the efforts of the employees, to assess and improve managerial performance, and thus achieve greater productivity and worker satisfaction.

Since the system was designed to be run at 12- to 24-month intervals, other procedures and reinforcement mechanisms need to be integrated with the MAS to insure that the system operates at an optimal level. These may include training programs on management areas needing attention, follow-up of Action Plans, and the use of management teams to investigate new procedures. Effective use of the MAS and other innovative strategies requires a significant commitment by management -- i.e., a real willingness to work toward innovative procedures to improve levels of performance and employee satisfaction.

Objectives of the MAS Study

The study reported in this chapter was conducted to acquaint Corps managers with the system and to examine:

1. Diagnostic capabilities of the system in analyzing management practices at the work group and the organizational level.
2. Ways the system could strengthen management capabilities and institute a process of organizational change.
3. Effectiveness of management in dealing with the information provided by the system.

Procedures

Preliminary Arrangements

Three Corps field offices (a Division office, District office, and research laboratory) were visited to solicit their cooperation and to discuss the nature of the project. All three sites agreed to participate. An important point stressed about the study was that the survey results were to be used as a constructive management tool to initiate change within the organization and not to induce threat or anxiety, which would limit the effectiveness of the system. Without exception, all the Chief Executive Officers of the three sites agreed to this constructive approach -- operationally defined by the strategy of allowing no one to see a copy of a feedback report other than the person to whom that report applied. This technique suggested that lower level supervisors were trusted to solve the problems that existed.

Also during the preliminary visit, one or two people were selected to serve as facilitators. These individuals were to perform a very important role; they would coordinate the administration of the MAS and be largely responsible for the feedback of the results. In addition, they would act as resource individuals to help supervisors realize opportunities for improvement from the feedback reports. The facilitators were briefed through telephone conversations, and a handbook was sent to them in preparation for a special two-day facilitator's workshop held at a central location to train individuals from each site.

Administrative Arrangements

After the workshop, the facilitators assumed most responsibility for administering the survey. This procedure was followed to reduce costs and to begin a process through which individuals at the sites became involved in insuring that meaningful results were obtained. The administrative procedures in general were effective -- very high percentages (89 percent to 99 percent) of the employees participated at the three sites.

The individual answer sheets were sent directly to the contractor for scoring, which was completed approximately 2 weeks after receipt of the employees' responses. The survey results were then ready for dissemination to the individual sites.

Feedback of the Survey Results

The feedback strategies used at each of the three sites varied to meet local circumstances. What follows is a general picture of the feedback process, with occasional comments to illustrate how procedures were modified for each site.

An appointment was made with the Chief Executive Officer approximately 1 week before the feedback was ready for distribution. Upon arrival at the particular site, and after a preliminary discussion with the facilitators, the contractor's representative met with the Chief Executive Officer, a few of his immediate assistants, and the facilitators. After a discussion of the system, the contractor's representative presented to the Chief Executive Officer the percent favorable results on the site as a whole. These results were compared to data on over 30,000 individuals in 18 other organizations and the other two Corps sites. In this manner, the Chief Executive Officer had an opportunity to review the overall data in private to become familiar with it and its implications. At this point the data were "owned" by the site -- not by the contractor. An agenda was then worked out for presenting these data to all individuals who reported immediately to the Chief Executive Officer -- typically, Division Chiefs and Office Chiefs. These individuals were given the survey results for the entire organization and told that the facilitator (and the contractor's representative during that week) would meet with them privately both to return their own results and to plan a meeting for reporting those results to their immediate employees. In this way the data were presented to the entire organization, with each supervisor having an opportunity for essentially three briefings: one from his/her supervisor about the results at that level, one with the facilitator and contractor representative to insure that the results were interpreted correctly at the next lower level, and finally a discussion with lower level employees to disseminate the results and plan the next steps.

In all the preliminary feedback meetings between the Chief Executive Officer and the facilitators, one of the topics mentioned was the importance of having the supervisor or manager lead the feedback session presenting survey results to his/her subordinate employees. This process substantially began

the transfer of "ownership" of the data; i.e., the data no longer belonged to the research organization which developed the survey and processed the responses, but to the individual manager who knew the situation, had the responsibility for initiating change, and was in a better position than anyone else to understand and act upon the implications of the data. After some brief discussion of strategies that could be used during a feedback meeting with subordinates, most supervisors and managers accepted their role with little difficulty, needing only occasional assistance from the facilitators and consultant.

Obviously, the facilitators played an important role in the feedback of the survey results because they: (1) were the on-site representatives of the survey, (2) were knowledgeable about the procedures, (3) had the support of the Chief Executive Officer in seeing that the survey results were used constructively, and (4) were in a position to marshal resources to assist people with difficulties. However, one of the problems encountered at all three sites was the conflict between the ongoing job duties of the facilitators and the activities required by the MAS system.

Results

This section presents the results obtained to date on a wide range of topics and includes an example of a feedback report with suggested strategies for change, a discussion of Action Plans, a description of the relative standing of the three Corps locations, selected results obtained with individual MAS items, and the results of follow-up visits to the selected locations.

Example Feedback Report

Table 10 is an example of a unit which is typical in that some scores are high and others are low. The table compares the unit of eight employees to the total Corps Sample in the first column (Organization) and to the rest of the local site -- District, Division, or laboratory -- in the second column (Component). However, as the table illustrates, the unit does have some serious problems. Of the 19 MAS percentile rank scores, 13 are in a range (below 40) which would indicate that difficulties probably exist. Of these 13, six are below 30 -- definitely indicating a need for improvement. A percentile rank of 30 indicates that the average score for the unit surpassed only 30 percent of the Corps employees surveyed, or 70 percent of the Corps employees surveyed described their work environment more positively than the average obtained in that unit.

Of particular interest in Table 10 is the percentile rank for Delegation of Authority: 70. This is a relatively high score indicating that the average for the unit exceeded the raw scores of 70 percent of the Corps employees surveyed. Apparently, employees were given a free hand to plan their work independently. However, this freedom evidently has not been directed effectively, nor is there evidence that standards were imposed on the quality and quantity of work output. The low scores on Supervisory Effectiveness and Planning and Administrative Efficiency indicate inadequate review and follow-up of work done, poor planning and scheduling of how work was to be done, and little help from the supervisor in solving work problems. A good deal of time apparently was spent doing unnecessary paperwork. The Communication scores, though not extremely low, do indicate employees perceived that management lacks interest in and awareness of subordinates' attitudes, problems, and ideas for dealing with problems.

Other MAS scores indicate that the employees were close to the norm in feeling that they could get ahead in the work unit or organization, in Satisfaction with Pay, and in feeling that management treated employees equitably. The relatively low scores on Morale, Co-worker Cooperation, and Work Satisfaction probably reflect the problems manifested in other scores. The fairly low score on Operational Efficiency (percentile rank = 27) is a further overall indicator of the unit's level of performance. The employees saw some problems in the group's ability to produce quality work; this perception might include difficulties in handling projects, solving problems that arise, working under pressure, meeting objectives, and adopting new, more effective approaches to problems.

In developing an Action Plan for this unit, the supervisor should recognize two factors: (1) there are strengths that could be used as building blocks, and (2) only two or three of the lower scores should be chosen for Action Plan strategies since an attempt to deal with all the low scores would be too diluted. The management areas selected should be those that have the most impact on the unit's

Table 10

Feedback Report of a Typical Unit*

MAS Results for U.S. Army Corps of Engineers
Organization Codes Which Begin With _____

8 Employees Included

Score	Percentile Rank of Unit Score In Relation to Scores of:	
	Organization	Component
1 Fairness of Management	41	41
2 Delegation of Authority	70	73
3 Supervisory Effectiveness	26	30
4 Planning & Administrative Efficiency	17	21
5 Climate for Innovation	32	35
6 Work Satisfaction	31	32
7 Training Effectiveness	36	40
8 Performance Feedback	35	37
9 Equal Opportunity for Women	27	30
10 Equal Opportunity for Minorities	29	33
11 Opportunity for Promotions	59	56
12 Downward Communication	46	45
13 Upward Communication	31	33
14 Satisfaction with Pay	58	61
15 Morale	30	34
16 Physical Working Conditions & Equip	26	31
17 Co-Worker Cooperation	38	43
18 Operational Efficiency	27	39
19 Workload Balance	42	53
66% Understaffing Responses		
3% Overstaffing Responses		

*Coding information and percent favorable results were omitted to maintain anonymity of the unit

performance. This unit's efficiency should be improved rather easily, assuming that management is willing to realize and accept that opportunities for improvement exist.

Action Plans

To effect organizational change, the behavior of individuals within the organization must change in some way. The MAS system provides a mechanism -- Action Plans -- to facilitate such change. Briefly, the supervisor chooses no more than two or three MAS scores which he or she feels can be improved. By communicating with employees and marshalling all potential resources in the organization, the manager develops strategies to solve the identified problem areas. Table 11 is an actual Action Plan completed at a Corps location. One criticism of the Action Plans developed thus far at the Corps locations is that they fail both to use task groups within the unit and to draw upon resource people outside the unit. Of 28 Action Plans from one location, only five reported the use of task groups, and only 12 reported using resource people to help solve one or more of the identified problems on the plan. More use of such assistance should be encouraged.

The Corps of Engineers Compared With Other Organizations

Over 30,000 employees in a number of organizations have responded to the MAS, so the Corps' results can be compared with those obtained elsewhere. Table 12 presents the percent favorable results from the three organizations studied within the Corps, and the highs and lows from 18 other organizations. To preserve their anonymity, the three Corps locations have been rank-ordered for each score area with the lowest of the three on the left. The organization that is high on one score could on the next be lowest, or the middle, or high again.

A comparison of the three Corps locations indicates that each Corps site had definite strengths (high scores) on which management could build, and definite weaknesses (low scores) which need to be corrected. One location was the highest on four of the 19 MAS scores and the lowest on 10. Another location was the highest on four scores, and was the lowest on two. The last location was the

Table 11
Example Action Plan

(1) Definition of Problem and Related MAS Score(s)	(2) Task Group Formed	(3) Problem-Solving Activities	(4) Feedback Planned	(5) Responsi- bility	(6) Resource People
4. Planning and Administration Effic. Favorable response 41% -- SPR mission assumption will exacerbate.	No	Change staff meetings and items of interest. Keep info. on SPR as visible as possible. Get SPR auth. and dollars for front end staffing.	No formal method.	Me/DD	DC-M advice
11. Opportunity for Promotions Favorable responses only 21% Perception by troops needs improvement.	No	Continue Executive Office staffing reorganization. Support lateral moves for improve- ment. SPR mission will provide some relief -- if done right.	No formal method.	Me/DD	Personnel as requested.
19. Workload Balance Favorable Response 39%. Not as bad as they perceive.	No	Change staff meetings and items of interest to better show what's really going on	No formal method.	Me/DD	DC-M advice.

Table 12

**Management Audit Survey: Percent of Favorable Responses in the
Corps of Engineers and in 18 Other Organizations Surveyed**

MAS Score Areas:	Corps of Engineers Locations			Other Organizations Surveyed	
	Low	Mid	High	Lowest	Highest
1. Fairness of Management	65	65	68	51	71
2. Delegation of Authority	50	57	65	42	61
3. Supervisory Effectiveness	51	59	59	47	67
4. Planning & Administrative Efficiency	25	37	41	35	48
5. Climate for Innovation	47	47	49	32	50
6. Work Satisfaction	64	68	71	53	79
7. Training Effectiveness	42	43	44	37	58
8. Performance Feedback	29	30	31	33	48
9. Equal Opportunity for Women	58	61	64	49	73
10. Equal Opportunity for Minorities	67	67	72	47	72
11. Opportunity for Promotions	20	21	24	19	36
12. Downward Communication	56	56	57	47	67
13. Upward Communication	41	43	45	32	52
14. Satisfaction with Pay	32	36	41	25	44
15. Morale	38	48	53	29	62
16. Physical Working Conditions	51	57	60	33	59
17. Co-Worker Cooperation	69	70	76	57	76
18. Operational Efficiency	72	73	81	56	75
19. Workload Balance	29	39	46	37	55

highest on four scores, tied for the high on one. The last location was the highest on four scores, and the lowest on three.

On the whole, results from the three Corps sites -- unlike those from other organizations surveyed -- display similar patterns. This finding supports the position that management ability across different Corps sites is generally uniform. Examples of scores which were similar at the three sites include Fairness of Management, Climate for Innovation, Training Effectiveness, Performance Feedback, Opportunity for Promotions, and the Communication measures.

However, on other scores there were highly significant differences among the three sites. For example, on Delegation of Authority (item 2) the average percentage of favorable scores ranged from a

low of 50 to a high of 65. Morale and Workload Balance also varied widely across the three Corps sites, ranging from 38 to 53 for Morale and from 29 to 46 for Workload Balance.

On item 4, *Planning and Administrative Efficiency*, there were also real differences among the organizations studied; the respondents at one of the Corps locations chose only 25 percent of the possible favorable response alternatives. This was lower than the scores obtained at any of the other 18 organizations studied. The second lowest Corps facility on Planning and Administrative Efficiency was also low in relation to the other organizations studied.

The most crucial finding in the table is item 8 -- *Performance Feedback*. On this measure, employees at all three Corps sites reported that they received only a limited amount of helpful information about their job performance. In other organizations, the percentage of favorable response alternatives endorsed ranged from 33 to 48. That is, from one third to one half of these employees described as positive and helpful the quality and quantity of information they received about job performance. These findings contrast clearly with the results obtained at all three Corps locations, where only 29, 30, and 31 percent of the favorable response alternatives were endorsed. Since most of the other organizations surveyed were Federal or State government white collar organizations, there are no apparent reasons for three Corps locations to set new lows. This is evidently an issue area that deserves some attention. Perhaps the new performance appraisal program -- which is being revised by the Department of the Army and is now being examined for implementation throughout the Corps -- will affect this area. The MAS results of this new program and any other information available should be monitored on a continuing basis to evaluate both the extent and nature of this problem, and any progress in overcoming it.

On item 10, *Equal Opportunity for Minorities*, one of the three Corps locations had a score which equaled the highest obtained in any of the other organizations studied. At this site, an average of 72 percent of the possible favorable response alternatives were endorsed by employees describing the EEO program for minorities. The other two locations were also relatively high on this score. However, minorities typically do not feel as positive as nonminorities about the progress that has been made.

On the *Opportunity for Promotions* score (item 11) all three locations scored relatively low, approximating the lowest scores from surveys of other organizations. Since the survey results in other organizations were obtained two or more years before the Corps' results, these findings may reflect some of the current restraints on grade levels.

The three sites were generally similar on MAS scores of *Downward Communication*, *Upward Communication*, and *Satisfaction with Pay*, but there were more marked differences on score 15 -- the *Morale* measure. Here, the three Corps locations obtained scores of 38, 48, and 53 percent endorsement of favorable response alternatives. While these differences were all within the range of results obtained at other organizations, they are still marked differences in how employees describe their work environment.

On item 16, *Physical Working Conditions and Equipment*, all three Corps locations received relatively high scores. With an average of 60 percent favorable responses, one of the Corps locations set a new high over those scores previously obtained in any of the other 18 organizations studied. A somewhat similar pattern of results was obtained for *Co-worker Cooperation* (item 17) where all three organizations scored relatively high, and one of the Corps sites tied with the highest score in any of the other 18 organizations surveyed. Since *Co-worker Cooperation* is a key determinant of *Operational Efficiency*, this score represents an important achievement by Corps management.

Another important result demonstrating the effectiveness of Corps management was obtained on *Operational Efficiency*, where all three Corps sites received high scores, and one of the Corps locations set a new high with an average of 81 percent of the favorable response alternatives chosen. This clearly surpassed the previous high, where an average of 75 percent of the favorable response alternatives had been selected.

The final score from the MAS, *Workload Balance*, indicated some level of strain in one of the three Corps locations, where only 29 percent of the favorable alternatives (indicating an appropriate match between the amount of work and the number of employees) were chosen. This result was a new low in comparison to the other organizations studied. A very large proportion of the employees at this location reported that they were understaffed. The other two locations had scores of 39 and 46, which were in the range obtained for the other 18 organizations.

A review of the results indicated nine scores where the overall average of Corps employees responding favorably was below 50 percent. This is the actual midpoint and helps one to focus on score areas which employees viewed less favorably. Two of these scores were in areas that are very difficult for Corps management to change: Opportunities for Promotions and Satisfaction With Pay. Of course the realities and constraints that affect these score areas need to be fully communicated to all Corps employees.

Responses to Individual MAS Items

There are also items in the MAS that were not part of the 19 score areas. Among these were the demographic items, specific items of interest, and new items that had been included to be tested for use in future scales of the MAS. An example of a demographic item is the question which asks whether the employee is a member of one of the following groups: Black, Spanish or Chicano, American Indian, Eskimo, and Aleut. Seven percent of the employees of the Corps of Engineers sample indicated that they were a member of one of these minorities.

An example of an item of general interest is one which asks, "All things considered, are you satisfied or dissatisfied with the work you do?" Eighty-six percent of the Corps employees indicated that they were satisfied -- a very high rating of satisfaction, especially considering the recent literature on the subject. Recent studies have found a trend toward increasing dissatisfaction with work among the nation's workers.²²

An item which has important implications for the future of the Corps asked employees to describe the effectiveness of the career development program in the Corps of Engineers: 14 percent of the employees surveyed responded that they were not even aware of the program, and 55 percent indicated that it was marginal or in need of a significant amount of improvement. The remainder (31 percent) described the career development program as effective or very effective.

Another item of interest is the one which asks, "Of all the supervisory personnel you have known in the Corps of Engineers, what percentage have been effective leaders?" Twenty-three percent of the employees surveyed replied that 25 percent or fewer supervisory personnel had been effective leaders. Twenty-seven percent replied that between 26 and 50 percent had been effective leaders. Thirty-three percent replied that between 50 and 75 percent of the supervisors had been effective leaders, and 16 percent replied that over 75 percent had been effective leaders.

About one half the employees surveyed indicated that fewer than 50 percent of the supervisory personnel they had known in the Corps of Engineers were effective leaders. These results offer strong support for the type of research reported here. Improvement of Corps management requires a thorough understanding of the strengths and weaknesses of current management practices, a commitment to excellence on the part of all echelons of the organization, and planned, realistic strategies for improvement.

Follow-Up Visits

Approximately 6 months after the feedback reports had been distributed to the supervisors of the work groups at the three Corps sites, follow-up visits were made to:

1. Determine to what extent the MAS had been used as a management tool at the various sites.
2. Determine what changes need to be made in the MAS system for it to most benefit the Corps and other organizations.
3. Provide a gentle reminder to supervisors and managers that the Action Plans should be implemented -- especially since a readministration of the MAS was already scheduled at one site.

The follow-up visits lasted 2 days, and researchers talked to as many people as could be scheduled. The interviews were with different levels of personnel from top-level management to employees. The key findings of these visits were:

1. Results from the MAS were considered valuable enough that follow-up administrations are planned at one site and already scheduled at another.

²² M. R. Cooper, B. S. Morgan, P. M. Foley, and I. B. Koplan, "Changing Employee Values: Deepening Discontent?" *Harvard Business Review* (January-February 1979), pp 117-125.

2. If strategies for implementing Action Plans were developed more systematically, those plans could be improved.

3. More Executive Office support of the MAS is needed, and that support should be evident to employees. For example, one comment was, "If we had known at the beginning that the survey was this important and that there would be follow-up complete with visits by the research staff, we would have made a greater effort to get the data in and do something with the feedback."

4. The MAS was not seen as just another survey. As a result of this administration, supervisors made many individual changes, which illustrated the intent of the MAS -- individual and organizational change and improvement.

5. Supervisory personnel became more aware of the need to be managers rather than administrative technicians.

6. If the MAS had been administered and analyzed by units within the Corps, employees would have felt less free to express their opinions about managerial practices.

7. The facilitator works best as one who provides information instead of wielding power.

8. To do an effective job, one facilitator was needed for every 50 work groups.

Future Work on the MAS

While the MAS system has many benefits and definitely can be useful to Corps organizations, there is one element that requires some modification -- the feedback printout received by individual supervisors. In their present form, the feedback reports are extremely difficult for some supervisors to understand. Table 13 illustrates the same information found on the existing feedback reports but presents it in a format which is much clearer and easier to understand. The percentile rank scores here indicate a direction either positive (above 50, shown by "+" signs) or negative (below 50, shown by "-" signs), and the score areas have also been grouped into six conceptual categories relevant to all organizations. The organization's percent favorable scores are still included on the far right, but in a graphic form rather than simple numbers, where 1 equals 20 percent favorable, 2 equals 40 percent favorable, and so on.

For example, in the Management score, the hypothetical unit reached a percentile rank of 68 for Supervisory Effectiveness. The unit also had approximately 50 percent of the favorable responses.

Some modification of the score areas themselves is also desirable. The communication score areas need revision to reduce the overlap of the actual questions, and two additional score areas could be added -- Personnel Development and Stress Anxiety.

Summary and Conclusions

Although the three sites sampled in this particular study may not be totally representative of all Corps sites, the findings presented in this chapter are so striking that they command attention:

1. On five of the MAS scores, a Corps location equalled or exceeded the highest level of performance obtained at any of the 18 other organizations studied to date. These scores were Delegation of Authority, Equal Opportunity for Minorities, Physical Working Conditions and Equipment, Co-worker Cooperation, Operational Efficiency.

2. On three of the MAS scores, a Corps location scored lower than the minimum obtained at any of the 18 other organizations. These scores were Planning and Administrative Efficiency, Performance Feedback, Workload Balance.

3. On one MAS score -- Planning and Administrative Efficiency -- two of the three Corps sites scored lower than any other organization ever surveyed.

4. On another MAS score -- Performance Feedback -- all three Corps sites obtained the lowest score ever obtained on any MAS administration.

Table 13

Revised MAS Feedback Report

MAS RESULTS FOR U.S. ARMY CORPS OF ENGINEERS
ORGANIZATION CODES WHICH BEGIN WITH _____
EMPLOYEES INCLUDED

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SCORE	PERCENTILE RANK OF UNIT SCORE IN RELATION TO SCORES OF THE TOTAL SAMPLE										GOAL ATTAINMENT OF THE TOTAL SAMPLE				
	10	20	30	40	50	60	70	80	90		1	2	3	4	5
MANAGEMENT															
1. SUPERVISORY EFFECTIVENESS										I++++++					*****
2. PLANNING & ADMINISTRATIVE EFFICIENCY										I+++++					*****
3. TRAINING EFFECTIVENESS										I+++++					*****
4. PERFORMANCE FEEDBACK										I+++					*****
MAINTENANCE															
5. FAIRNESS OF MANAGEMENT										-----I					*****
6. WORK SATISFACTION										-----I					*****
7. MORALE										I++++					*****
8. PERSONNEL DEVELOPMENT (NEW)										-----I					*****
9. STRESS AND ANXIETY (NEW)										-I					*****
HYGIENE															
10. OPPORTUNITY FOR PROMOTIONS										I++					****
11. SATISFACTION WITH PAY										-----I					*****
12. PHYSICAL WORKING CONDITIONS & EQUIP.										-----I					*****
ADAPTATION															
13. DELEGATION OF AUTHORITY										-----I					*****
14. CLIMATE FOR INNOVATION										I+++++					*****
PROGRAMS															
15. EQUAL OPPORTUNITY FOR WOMEN										-----I					*****
16. EQUAL OPPORTUNITY FOR MINORITIES										-----I					*****
FUNDAMENTAL SCORES															
17. COMMUNICATIONS										I+++++					*****
18. CO-WORKER COOPERATION										I+++++					*****
19. OPERATIONAL EFFICIENCY										I+++++					*****

SPECIAL NOTE -- THIS UNIT IS UNUSUALLY UNDERSTAFFED. THE PERCENTAGE OF RESPONDENTS REPORTING AN EXCESSIVE AMOUNT OF WORK IN RELATION TO THE NUMBER OF EMPLOYEES WAS 87.

The statistical analyses performed on the survey instrument and the data obtained through its use have been precise and exacting. Due to their complexity and high level of sophistication, specific analytical techniques have not been detailed in this report; however, they are available from CERL-FS. The analyses did show the MAS to be a highly reliable and valid system which is diagnostically sensitive to management practices.

8 SUMMARY

Overview

The existing performance appraisal system and the selection and promotion system have been investigated, and developmental research on new and potentially usable procedures for both systems has been completed. These new procedures have been described in this report, and all have potential benefits for the Corps of Engineers. Each procedure involves relatively straightforward activities and has demonstrated validity for use by the Corps.

The Selection and Promotion Process

In Chapter 2, the conceptual framework for all research described in this report was presented as Figure 1. Figure 8 shows where the new procedures can be used in the selection and promotion process.

Once a job opening is identified, the job requirements are defined with the Job Activities Description before candidates for the position are screened. When the actual selection or screening process begins, two sources of information on each candidate are available to the selection official; one is information relevant to job performance, and the other is personal information for each candidate. Job performance information is obtained from peer rankings, immediate supervisor's ratings (including SKAP elements), and second-level supervisor's ratings. The personal characteristics are described by the Biographical Inventory, the Biographical Sketch, and by the candidate during the interview.

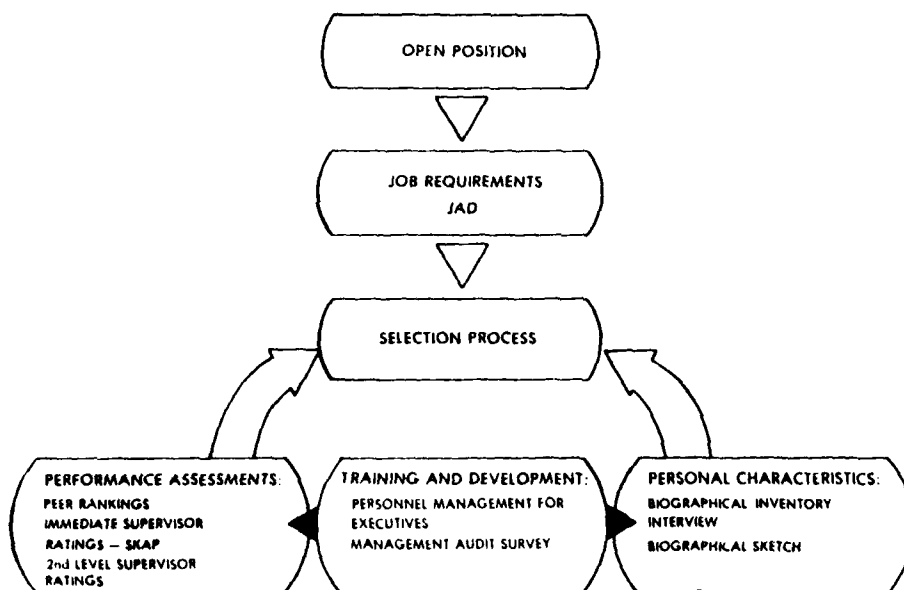


Figure 8. Procedures for filling an open position.

An additional procedure -- which is not a selection technique per se -- is the Management Audit Survey. This is a management tool which may be used to measure the organization's effectiveness.

Review of the Procedures

The Job Activities Description

The JAD is a relatively brief instrument which provides information about the characteristics of managerial jobs. The relative importance of various job duties at higher levels of management needs to be broadly disseminated so that information on these characteristics can become part of the selection/promotion process. For example, ratings showed that job activities such as training and motivation of personnel become more important at higher levels of management. Yet interviews indicated that managers do not spend a significant amount of time on employee development procedures.

Besides the Training and Motivation of Personnel category, duties in the Long-Range Planning, Evaluation and Control Activities, and Initiation of Improvements of Methods and Operations categories were significantly related to managerial level. The results suggest that the importance of these activities should be emphasized not only in assessing applicants for managerial positions, but also in helping managers develop their capabilities.

Peer Ranking

This process asks all engineers and scientists at GS-12 and above to rank certain scientific and engineering personnel at GS-11 and above whom they know well enough on two criteria dimensions: Technical Competence and Communication Ability. Such a system seems valuable as a supplement to present procedures for appraising performance. Evaluations of individuals by other managers in a variety of different situations should be included in the selection process. Furthermore, since a ranking procedure would be involved, peer rankings would offset the leniency of some ratings by supervisors, and thus would help identify those individuals most qualified for managerial positions.

Ratings by Immediate Supervisors

As the single individual most familiar with a subordinate's performance, the immediate supervisor completes a form which rates the employee on each of the five criterion dimensions (including the two used in Peer Ranking). The supervisor is also asked to review the 24 SKAP elements and indicate the four elements on which the employee is the most highly skilled, and the four on which he/she has the greatest opportunities for improvement. This procedure forces discrimination on the part of the supervisor, thus improving diagnostic sensitivity and making the assessment more useful to the employee's career development.

Second-Level Supervisory Ratings

This procedure collects ratings from second-level supervisors on two of the five performance dimensions; the purpose is to obtain another level of independent assessments of performance. The procedure currently used with the SKAP requires that second-level supervisors only approve the ratings by first-level supervisors. With the new form, the second-level supervisor has the option of rating the employee on up to an 11-point scale. Each even-numbered point has a behaviorally based, one-sentence description of what performance at that level should indicate. These independent ratings give a broader assessment base and additional reliability and validity to the entire rating process.

The Biographical Inventory

Form V-2 of the Biographical Inventory, consisting of a series of multiple-choice questions, provides information from employees about their work experience, skills, and management background. A variety of items from this instrument had significant relationships with a composite criterion consisting of a promotion rate and peer nominations.

The biographical items associated with high levels of managerial performance provide a partial but important portrait of the successful manager in the Corps. Successful managers are comfortable and effective in dealing directly with people, flexible in handling a variety of activities, quick witted, and

able to handle pressure with little difficulty. They describe themselves as skilled in managerial activities, preferring responsibility, and drawing upon the breadth of experience in their backgrounds. They were also interested and effective in instituting new policies and procedures.

The Biographical Sketch

The Biographical Sketch is a one-page instrument designed to gather specific information concerning the activities of and rewards received by the individual respondent. The 12 items contain demographic information, the number of specific types of awards received, and the activities of the employee in special circumstances. The data obtained are objective and can be verified easily from personnel records.

The Interviewing Manual and Guide

Typically, interviewing procedures tend to have limited validity in predicting performance criteria. Yet, the interview is one of the most widely used selection procedures because both applicants and supervisors need to communicate their expectations and exchange information. To improve interviewing skills, a guide and accompanying instruction manual were developed during this research. The guide provides questions which help the interviewer gather information on technical job requirements, managerial characteristics (including data related to the Job Activities Description), and general impressions. The guide incorporates some sophisticated procedures for recording and scoring the information gained during the interview.

The Management Audit Survey

The MAS is a system to stimulate higher levels of human resource management by providing all levels of management an analysis and review of certain organizational characteristics. The MAS system is a combination of a 100-item questionnaire completed by employees, a computerized method for providing feedback to supervisors, and a handbook to assist supervisors in developing programs for constructive change. The MAS provides quantified indications of management performance and organizational characteristics for areas which formerly could be assessed only in a limited or subjective manner. In so doing, the system provides the impetus for a review of current practices and an opportunity to revitalize the organization. The MAS is not to be directly used as a selection/promotion procedure, but rather is a management tool for improving the total organization and its managers.

Addressing the Problem of Performance Criteria

In developing any performance appraisal system, criteria are mandatory to assess performance. Without thorough definition, quantification, analysis, and evaluation of performance measures (in terms of relevance, reliability, and other psychometric characteristics) any selection/promotion system may have crucial weaknesses in practical operation.

Performance criteria serve as necessary guides in establishing a system for monitoring development, evaluating achievements, diagnosing deficiencies or opportunities for improvement, providing feedback about process or outcome measures, and integrating these concerns for decision making at all levels. In the studies reported, extensive work had gone into developing performance criteria which were validated against the performance indicators (peer rankings, immediate supervisory ratings, second-level supervisory ratings, and biographical inventories). The new procedures are diagnostically more sensitive and have significant predictive validity because of the criteria development.

Field Evaluation of Managerial Selection/Promotion Procedures

In a separate contractual effort, the procedures described and discussed in this report were evaluated, on a limited basis, at two Corps sites. Results of the pilot testing are available in a report which describes that work.²³

²³ Ellison, R. L., C. Abe, D. G. Fox, C. W. Guest, and W. D. Veneklasen. *The Development and Evaluation of Managerial Selection/Promotion Procedures*, Technical Report P-115 (CERI, 1980).

9 CONCLUSIONS AND RECOMMENDATIONS

This report has documented development of procedures for identifying and selecting top-level managers in the Corps of Engineers.

The Procedures as Individual Components

The Job Activities Description

This procedure is straightforward and easily used to determine the characteristics of managerial jobs. It has gone through several revisions during its development, with results demonstrating the feasibility of using the JAD across grade levels and job classifications:

1. The use of JADs has demonstrated that they can help determine the job skills required of the person chosen to fill a particular position. The amount of time spent on various job activities was shown to vary by GS level; in general, higher graded personnel spend their time on many different managerial, general activities. At the lower grades, however, individuals spent most of their time performing specialized technical duties.
2. The importance of each of the 27 activities was also presented for the six grade levels studied. At grades 11 and 12, no management activities -- other than Use Knowledge and Skills in a Technical Capacity -- were rated as very important. At grade 13, eight activities were rated as very important; by grade 16, ten activities were so rated.
3. Beyond the general findings about the importance of, and time spent on, various activities across grade levels, the analysis of job classifications was not conclusive.

Peer Ranking

This procedure is yet untried in the field, but its rationale is sound:

1. Coworkers are likely to perceive different aspects of performance than are supervisors. Behavior among coworkers is likely to be different and more "natural" than behavior in the presence of a supervisor.
2. Coworkers are in a better position to observe a wider variety of behaviors because they usually have more contact with the employee than does the supervisor.
3. Peer ratings can be used as a reliability check on the performance ratings of the supervisor.

First-Level Supervisor's Rating Form

This instrument, administered in the field, has been reviewed by Corps supervisors who would be using it. No supervisor indicated that he/she would have any problems completing the form on any employee.

The form is brief (a single sheet of paper) and easily completed by the supervisor. Among the advantages of this procedure are:

1. Each performance dimension is clearly defined so that all employees are rated on the same dimension; each is independent and not influenced by the others.
2. The rating categories within each dimension are discrete and compare the rated individual with all other employees being rated.
3. This procedure is linked to the existing performance evaluation system through the use of the 24 SKAP elements. Four areas of strengths and skills and four areas for improvement are identified, allowing the supervisor to use the SKAP elements in a more diagnostically sensitive manner.

One dimension that could be included in the form is Supervisory Ability or Potential for Supervisory Status.

Second-Level Supervisor's Rating Form

This device was also reviewed but not administered in the field. The three performance dimensions are relevant to second-level supervisors.

While more elaborate than the first-level supervisor's rating form, this instrument does have several benefits:

1. All employees are rated at the same time.
2. All employees are rated on a single dimension before the supervisor proceeds to ratings on the next dimension. This technique should decrease the likelihood that the second-level supervisor will rate certain employees high on all three dimensions.
3. All employees are rated on behaviorally based scales rather than on the subjective judgments of the supervisor.

Ratings and Rankings in General

Aside from the individual attributes of the separate rating and ranking components, the instruments provide information on employees which has never been systematically available to Corps supervisors:

1. The performance characteristics or dimensions used by peers and the two supervisory levels in the evaluation process are the same. All raters and rankers use the same definition of each dimension.
2. By obtaining information from three sources on the individual being evaluated, the reliability of the ratings is much improved and the effects of overly positive or overly negative single-source evaluations are eliminated.
3. Average scores *per rater* are now systematically provided.
4. The diagnostic sensitivity of the existing SKAP system is improved.
5. Second-level supervisors can now play an active role in evaluating employees and comparing them rather than merely signing the first-level supervisor's appraisal form.

Biographical Inventory: Form V-2

This procedure has gone through at least two major revisions in its development. In its final form, the BI provides background information on each employee in six conceptual categories relevant to managerial performance. Use of biographical inventories has several advantages for the Corps of Engineers:

1. Previous research has shown this approach to be the single most valid predictor of future performance.
2. Reliability of the information does not change over time.
3. Information is obtained directly from the individual rather than interpreted by various supervisory levels.
4. The objective and empirical scoring system does not rely on value judgments of the information.

Biographical Sketch

This very brief form compiles information on each employee's activities and rewards. Though not a substitute for any existing procedure, the Biographical Sketch has the following benefits:

1. Objective information is easily verified by personnel records.
2. All relevant information is available on the Sketch's single page, thus eliminating the need for a time-consuming, close examination of the entire personnel folder.
3. The information is already summarized and therefore particularly useful to selection panels.

To improve the form, two additional categories could be included: Suggestion Awards and Professional Licensure.

Interviewing Manual and Guide

Interviews are conducted routinely but lack reliability. The Interviewing Guide and Manual were designed to provide a number of improvements:

1. A systematic framework for obtaining reliable interview information from each candidate.
2. A guide which can help bring supervisors to a shared level of interviewing skills.
3. A scoring technique introducing objectivity and standardization to interviews. Each candidate's scores can then be considered in the total selection process.

Management Audit Survey

This procedure, under refinement for more than 10 years, is designed to help organizations achieve higher levels of effectiveness and efficiency. It is not a selection or promotion technique, but can be used to upgrade the entire organization:

1. By involving all levels of management and all employees in identifying and overcoming problems in the work environment.
2. By stimulating an organization-wide movement toward improved management practices, increased productivity, and higher levels of employee satisfaction.
3. By opening communications about organizational performance and effective human resource management.

The MAS was shown to be a highly reliable and valid system which is sensitive to management practices and their impact on an organization. Use of the MAS is a low-risk venture that could be quite valuable to the Corps.

Recommendations

The procedures reported here promise to benefit the Corps of Engineers in varying degrees. Enough developmental and feasibility research has been completed to recommend that:

1. Additional Divisions, Districts and Field Operating Agencies (FOAs) be surveyed using the MAS. This will help assure that the results are representative of the Corps as a whole.
2. The Biographical Inventory, peer ranking system and supervisors' appraisals undergo continued development and assessment to insure their validity and reliability.
3. These tools be put at the disposal of the Corps Division and District Engineers and Chiefs of FOAs to assist them in meeting their managerial improvement objectives.
4. Interface with current personnel evaluation systems be pursued as is feasible and appropriate.
5. Potential opportunities under the Civil Service Reform Act be thoroughly explored to include such potentially fruitful areas as selecting candidates for the Senior Executive Service.

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APPENDIX A:

IMMEDIATE SUPERVISOR'S ASSESSMENT FORM

IMMEDIATE SUPERVISORY ASSESSMENT (For Research Purposes Only)

Introduction

As part of a study on the development of performance indicators for managerial talent, a meaningful evaluation of all scientists and engineers (GS-11 and higher) by their immediate supervisor is necessary. Such information will play a vital role in evaluating other data being collected. This can be accomplished by completing both sides of the Supervisory Assessment form. The information you provide will be used in the development of a system to help the Corps of Engineers achieve a cadre of strong leadership in the years to come. The data will be used for research purposes only, and will be processed by the Institute for Behavioral Research in Creativity (IBRIC).

Instructions

Please fill out a separate Supervisory Assessment form for each employee you directly supervise. Please write the name of the employee and your name at the top of each form in the areas indicated.

On side 1, rate the employee on each of five dimensions, using the scale at the right. The scale indicates that, of all the employees that you have known in the Corps, only the top 10% would be rated as outstanding, the next 25% would be rated as unusually competent, the middle 30% as fully competent, etc. Your ratings should use the scale to reflect your observations about differences in employee performance.

The rating that you assign to an employee on one dimension should not influence your rating of that employee on any other dimension -- each employee probably has areas of strength and areas of weakness. Place a check mark in the box that corresponds to your rating of the individual on the dimension.

On side 2 of the form, you are to indicate for the individual the four (4) areas in which he/she is the most highly skilled, and the four (4) areas in which the individual needs improvement the most. Write the appropriate response on the line to the left of the number for the characteristics identified, following the directions on the top of side 2.

Your cooperation is greatly appreciated.

SUPERVISORY ASSESSMENT
(For Research Purposes Only)

Name of Employee _____

Immediate Supervisor _____

JOB DIMENSIONS

ASSESSMENT

For each job dimension, place a check mark in the box under the ONE category which most accurately describes the employee's ability in that area.

DO NOT let your rating on one dimension influence your rating on other dimensions.

1. TECHNICAL COMPETENCE. Consider the employee's ability to apply comprehensive knowledge to the solution of complex engineering or scientific problems. Evaluate the employee's methodological expertise in developing effective and economical use of materials and forces of nature, and competence in scientific and engineering functions.

WEAK	MARGINALLY COMPETENT	FULLY COMPETENT	EXCEPTIONALLY COMPETENT	OUTSTANDING
Low 10%	Next 25%	Middle 30%	Next 25%	Top 10%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. COMMUNICATIONS. Evaluate the employee's ability to receive, comprehend, and transmit a range of messages to a variety of audiences. Include ability to listen and sense the needs of others, establish rapport, and use effective techniques to see that he/she understands and is understood. Consider the power the individual's communications have to influence audiences, group or individual.

WEAK	MARGINALLY COMPETENT	FULLY COMPETENT	EXCEPTIONALLY COMPETENT	OUTSTANDING
Low 10%	Next 25%	Middle 30%	Next 25%	Top 10%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. COORDINATION. Consider how well the employee analyzes work flow and recognizes interaction of assigned work with actions of others; the degree to which the employee fully understands the necessity for team effort in problem solving, and accomplishes work by actively mobilizing staff capability and obtaining needed assistance from all echelons.

WEAK	MARGINALLY COMPETENT	FULLY COMPETENT	EXCEPTIONALLY COMPETENT	OUTSTANDING
Low 10%	Next 25%	Middle 30%	Next 25%	Top 10%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. DECISION MAKING. Evaluate the person's intellectual skills in decision making. Consider the degree to which the person gathers meaningful information, weighs it according to relevance and reliability, and is analytical in the development and application of appropriate criterion factors so that highly effective decisions on complex issues result.

WEAK	MARGINALLY COMPETENT	FULLY COMPETENT	EXCEPTIONALLY COMPETENT	OUTSTANDING
Low 10%	Next 25%	Middle 30%	Next 25%	Top 10%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. INNOVATION. Assess whether the individual typically approaches situations with an openness to fresh ideas which facilitate innovations, organizational vitality, and responsiveness to change. Consider how well informed the individual is of current developments within and outside the organization and their implications for future organizational development.

WEAK	MARGINALLY COMPETENT	FULLY COMPETENT	EXCEPTIONALLY COMPETENT	OUTSTANDING
Low 10%	Next 25%	Middle 30%	Next 25%	Top 10%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

On the following list of employee characteristics, please mark with an "S" those four (4) on which the employee is the most highly skilled. Also, please mark with an "I" those four (4) on which the employee has the greatest opportunity for improvement. Please remember to mark four and only four with each letter. No single characteristic should be marked with both an "S" and an "I". The list of characteristics was taken from the Annual Referral Assessment -- SKAP (DA Form 4428-R). If you would like a more specific definition of the characteristics, please refer to that form.

- | | |
|--|--|
| <input type="checkbox"/> 1. Skill in establishing and maintaining effective working relationships | <input type="checkbox"/> 14. Ability to relate organization and mission requirements to training needs |
| <input type="checkbox"/> 2. Skill in oral communication and briefings | <input type="checkbox"/> 15. Familiarity with personnel policies and procedures |
| <input type="checkbox"/> 3. Skill in written communications | <input type="checkbox"/> 16. Technical competence in assigned activities |
| <input type="checkbox"/> 4. Dependability | <input type="checkbox"/> 17. Knowledge and technical application of applicable laws, policies, regulations, and procedures |
| <input type="checkbox"/> 5. Initiative and drive | <input type="checkbox"/> 18. Knowledge of contract law and contract provisions related to assigned activities |
| <input type="checkbox"/> 6. Ability to absorb new facts and concepts | <input type="checkbox"/> 19. Ability to execute technical activities within established financial and/or time constraints |
| <input type="checkbox"/> 7. Knowledge of automatic data processing | <input type="checkbox"/> 20. Ability to render sound decisions in a timely manner on technical matters |
| <input type="checkbox"/> 8. Motivated to self-improvement | <input type="checkbox"/> 21. Ability to accomplish programming and budgeting activities, including long-range planning |
| <input type="checkbox"/> 9. Personal commitment to Equal Employment Opportunity, incentive awards, career development, and special emphasis programs | <input type="checkbox"/> 22. Ability to understand the inter-relationship of socio-economic and environmental goals and implement coordination required in the use of water and land resources |
| <input type="checkbox"/> 10. Ability to select, develop, motivate, and supervise subordinates of varied backgrounds and skills | <input type="checkbox"/> 23. Familiarity with functions of industry and others related to assigned activities |
| <input type="checkbox"/> 11. Ability to delegate authority | <input type="checkbox"/> 24. Ability to apply methods and procedures necessary to assure quality end product |
| <input type="checkbox"/> 12. Ability to coordinate and integrate work programs of subordinate organizations, peer groups, and higher authority | |
| <input type="checkbox"/> 13. Ability to assess program requirements and to adjust available resources for optimum efficiency and effectiveness | |

APPENDIX B:

SECOND-LEVEL SUPERVISOR'S RATING FORM

RATING FORMS FOR CORPS OF ENGINEERS EMPLOYEES (For Research Purposes Only)

Introduction

This rating form is an important part of a study on the development of performance indicators for managerial talent. More specifically, sources of information, predictor tools, and methods of quantifying performance information will be evaluated as part of the study to determine how improved selection/promotion procedures for managerial positions can be developed.

All information collected during the study will be kept strictly confidential and will be used *for research purposes only*. The data will be processed entirely at the Institute for Behavioral Research in Creativity (IBRIC), and the results will be reported only in terms of relationships found on the total group, without any reference whatever to individual employees.

Explanation of the Rating Forms

As you open the accompanying booklet, you will find a space provided on the left for the names of all individuals for whom you serve as a second level supervisor. On the right of the page, five different levels of a job performance dimension are described. These descriptions occur at even points along an 11-point scale. The odd numbers between the statements indicate a position on the scale between the two adjacent statements. These odd numbers can be used to indicate on which side of a particular statement an employee's performance tends to be. They also can be used to make distinctions between any two employees who receive the same rating so that you can reduce the number of ties in your ratings on each page.

The percentages in the vertical block present a picture of how 100 employees would be distributed across the descriptive levels. These percentages are included as guidelines as you make your evaluations.

Please carefully read the instructions on the cover page before beginning the rating procedure.

RATING FORMS FOR CORPS OF ENGINEERS EMPLOYEES (For Research Purposes Only)

Instructions for Completing the Forms

The following four steps are required to complete the rating forms:

1. On each rating scale, read all of the five descriptive statements thoroughly before rating the first employee. Select the number from the scale which best describes the performance of each employee and write this number within the parentheses opposite that name. Rate all of the people on each scale before proceeding to the next page. You may rightly think that none of the statements is an exact description of the individual, but make the best single choice you can.
2. In your assessments, evaluate each person in comparison to the descriptive statements and the percentage guidelines, emphasizing demonstrated accomplishments rather than potential. If you have not had a sufficient opportunity to observe an individual's performance, write NO (no opportunity) in the parentheses.
3. In your evaluations, be certain to remember that:

Everyone has both strengths and weaknesses; therefore the usual pattern for an individual should reflect a combination of different ratings. It would be a rare instance when an employee would be equally strong or weak in both aspects of performance.

Ties should be reduced by using the odd number between two adjacent statements.

4. After you have completed the rating forms, remove the back sheet which lists the *names* of those people you have rated. This will help to ensure the anonymity of all participants.

Remember, the ratings are for research purposes only and results will be reported in terms of relationships found on the total group, without any reference whatever to individuals, so please make your evaluations as accurate as possible.

Thank you for your cooperation.

Rater Number _____

Names of persons to be rated:

Hypothetical breakdown of how a sample of 100 employees might be distributed across the descriptive statements.

Evaluate the person's intellectual skills in decision making. Consider the degree to which the person gathers meaningful information and is analytical in the development and application of appropriate criterion factors so that highly effective decisions on complex issues result. DO NOT consider any other aspects of performance-- ONLY the person's decision-making performance.

1

10%

2 Has some difficulty in integrating information, in considering significant factors, and in making important, timely decisions.

3.

25%

4 Available information and criteria for problem solving are handled effectively for most routine problems and decisions.

(7)

30%

6 Collects meaningful data and weighs information appropriately so that most decisions are handled satisfactorily; judgements are usually correct.

25%

8

Uses information appropriately and has superior ability to analyze and recognize implications which leads to effective decisions.

9

10%

10

Evaluates information and develops relevant criteria so that even complex decisions are precedent setting. Makes unusually valid evaluations.

11

Names of persons to be rated:

[illegible]

Hypothetical breakdown of how a sample of 100 employees might be distributed across the descriptive statements.

Evaluate the innovative impact of the person's efforts. Consider the extent to which situations are approached with an openness to new ideas which facilitates innovations, organizational vitality, and responsiveness to change. DO NOT consider any other aspects of the person's job performance--ONLY the innovative effects of the individual's job performance.

1

10%

2 In discussions about new approaches, tends to
emphasize difficulties rather than opportunities.
does not really want or support innovative ideas.

3

25%

4 Occasionally supports some new procedures, but usually urges a careful evaluative approach; relies upon current methodology rather than promoting or developing new ideas.

5

30%

Periodically develops, or provides some support for, new ideas, but is basically oriented toward current procedures pending evaluative evidence.

11

252

Carefully reviews ongoing and new procedures, looking for possible improvements. Often questions status quo to achieve organizational vitality.

9

102

10 Usually is enthusiastic, open, and supportive of new procedures; works actively to promote new responses and approaches which facilitate organizational effectiveness.

[illegible]

APPENDIX C:

SAMPLE INSTRUCTIONS FOR RANKING PROCESS

RANKING SCALES FOR CORPS OF ENGINEERS (For Research Purposes Only)

The attached forms are part of a study to try to improve the selection/promotion process. These forms were designed to determine whether rankings of individuals by their peers would provide useful information to an overall system of performance evaluation and career development. The process is concerned with assessing individuals at GS-11 and above. The current activity is for research purposes only; these current evaluations will be kept strictly confidential. The data will be processed entirely at the Institute for Behavioral Research in Creativity, and the results will be reported only in terms of total group relationships. *NO* results will be reported on individuals.

Studies in other settings indicate the peer ranking process has the potential of providing important information and this information is from individuals other than the immediate supervisor. If, after a review of the current research results, it is concluded that rankings by peers do provide useful information, then the peer ranking procedure would become part of the selection system along with the SKAP procedures, panelling procedures, etc.

Please work by yourself. The ranking process must be done by each person independently. Since judges often differ in their evaluations of the same individual, the rank orders are not expected to be the same for all judges. Moreover, since communication skills and technical competence represent different abilities, it is expected that the two rank orders will usually be different.

To facilitate the ranking process, you have been provided with a deck of 60 computer cards. Each card has the name of one individual, chosen randomly from all GS-11s and above.

Step-by-Step Instructions

1. Take the deck of computer cards and rapidly sort them into the two groups described below:
 - a) Those whose performance you know well enough to evaluate on technical competence and communication skills. These cards should represent persons whom you have actually observed at work. These are the ones you will rank.
 - b) Those whose performance you do *not* know well enough to evaluate. This group should also include yourself and any of your subordinates, if they appear in the deck. These persons will not be ranked; all the cards in this group should be thrown away. In most cases this "discard" group will be a substantial portion of the original 60 cards.
2. Carefully read the definition of "technical competence."
3. Take the deck of cards representing the persons whose work is well-known to you. Use the cards to rank order these people from highest to lowest on "technical competence." One way to do this would be to take the top card and place it face up on the table; take the second card and compare it to the first card, placing it to the left of the first card if the person has more technical competence or to the right if the person has less. Continue this process, opening up space between the cards whenever necessary, until all the cards are ranked in order. Now check the rankings and make any final changes in rank order. Assemble the deck so that the *highest rank is on top* -- the person with the *most* technical competence. The lowest rank should be on the bottom.

4. On the *left-hand* side of each card, record the number representing that person's rank on technical competence. The top-ranked person should be "1"; if you rank 12 persons, the bottom-ranked person should be "12". Write each number so that it is large and clear.
5. Check to ensure that the bottom rank is given the same number as the number of persons you ranked.
6. Shuffle the deck.
7. Carefully read the definition of "communications."
8. Again, take the deck of cards representing the persons whose work is well-known to you. Use the cards to rank order these people from highest to lowest on "communications." Assemble the deck so that the highest rank is on top -- the person with the best communication skills. The lowest rank should be on the bottom. Check the rankings and make any final changes in rank order.
9. On the *right-hand* side of each card, record the number representing that person's rank on communications. Again, the top-ranked person should be "1". Write each number so that it is large and clear.
10. Check to insure that the bottom rank given is the same as the number of persons you have ranked.
11. Check to insure that each card has two numbers written on it -- the rank order for "technical competence" on the left, the rank order for "communications" on the right.
12. Return your ranked deck of cards to _____.

APPENDIX D:

BIOGRAPHICAL INVENTORY: FORM V

This preliminary examination of a BI as an integral part of the process of selecting high-level managers is a study within itself. As mentioned in Chapter 5, the use of biographical data has been one of the most valid approaches to identifying managerial talent. Data for this study were collected on 219 scientific and engineering employees at GS levels 11 through 16 from the Missouri River Division and the Omaha District.

Description of the Biographical Items

Of the 150 items in Form V, 54 were obtained from forms the contractor previously developed for other studies. Thirty-three of these were taken from a BI developed for a study of performance criteria -- for example, creativity, skill with people -- among scientists and engineers at a large aerospace firm. Twenty items were taken from a form developed to assess performance of first-level supervisors at a large textile manufacturing and development company.

Fifty biographical items were developed specifically for this current study. These new items were written to supplement those from other BIs and to cover more adequately ideas obtained from the interviews with Corps of Engineers employees.

In addition, 10 items in Form V were revised versions of items taken from Ghiselli's Self Description Inventory.²⁴ These items ask the respondent to indicate which of two traits is more descriptive of him/herself. These items were empirically keyed by Ghiselli to predict various aspects of managerial performance, such as supervisory ability, intelligence, initiative, self-assurance, and decisiveness.

In Form V, nine items were revisions of items taken from the Standard Oil of New Jersey Management Judgment Test.²⁵ The Management Judgment Test has demonstrated significant validities in predicting managerial performance. For example, correlations of .47 and .51 were obtained on two separate samples with the Management Judgment Test for predicting an overall success index. These validities were exceeded only by those for biographical data. The overall success index was based on the manager's position level, his/her salary history, and an effectiveness ranking by higher level people -- with precautions to eliminate the effects of his/her age, length of experience, etc. An important component of this measure was the manager's past flexibility and innovation in adapting to changing conditions.

Twenty-seven items in Form V were concerned with breadth of experience. These items asked about the amount of experience the respondent had in each of seven Corps functional divisions and twenty functional areas. Lists of these experiential categories were obtained from Department of the Army forms.

Throughout the construction of Form V, the guidelines for selection devices put forth by the Civil Service Commission (now Office of Personnel Management) were strictly followed. This meant that items had to have either a relationship with actual managerial performance or demonstrated statistical validity in the past.

The items in Form V could be subjectively assigned to 10 categories, plus a miscellaneous category:

1. Achievement Motivation. Eleven items dealt with the willingness of the respondent to make the effort necessary to get ahead. Questions concerned the energy with which the respondent conducts his/her duties, the desire to master a broad body of knowledge, and how favorably the employee felt he/she would compare to others as an executive.

²⁴ E. E. Ghiselli, *Explorations in Managerial Talent* (Pacific Palisades California: Goodyear Publishing, 1971).

²⁵ J. P. Campbell, M. D. Dunnette, E. E. Lawler III, and K. E. Weick, Jr., *Managerial Behavior, Performance, and Effectiveness* (McGraw-Hill, 1970).

2. Antecedent Leadership. Four items were concerned with the respondent's having been elected to positions of leadership while in college.

3. Communications. Twelve items in the form concerned the respondent's ability to communicate with others. Questions were asked about the respondent's history of speaking before groups, writing skills and experience, and style of communication.

4. Intelligence. Fourteen items were related to the respondent's ability to grasp ideas and use them in rational thinking, to relate to several different activities at the same time, to ask meaningful questions, to be "quick witted."

5. Initiative. Fifteen items were concerned with the development and implementation of new methods, processes, and ideas. Specific questions asked about the persistence and aggressiveness of the respondent in standing up for and gaining recognition for ideas, ability to set a course and move toward a goal with little guidance, and willingness to work within the system or work to change the rules if necessary to implement meaningful change.

6. Interpersonal Skills. Thirteen items dealt with interacting with others, gaining cooperation and respect, being tactful, getting to know people, and, in general, being interested in others.

7. Management Ability. Twelve items dealt with management ability, such as the skill to mediate a dispute, stimulate productive thought and action, anticipate potential problems, forecast program development.

8. Management Judgment. Fifteen items were concerned with presenting a number of alternatives for handling a specific problem; the respondent was asked to judge which alternative would produce the best results.

9. Job Activities. Seventeen items were concerned with points taken specifically from the Job Activities Description form. These items presented pairs of activities, one of which was more typically associated with higher-level managers, and the respondent was asked to indicate in which of the two he/she was more skilled.

10. Experience. Thirty items dealt with the respondents' experience in the Corps. Of these items, seven concerned specific Corps of Engineers Division functions; 20 concerned the various functional areas listed in the Department of the Army Form 4428. These 27 items asked the amount of time spent in each of the areas. Additional items asked in how many of the functional divisions they had experience, in how many of the functional areas they had experience, and the amount of foreign country or overseas experience they had.

11. Miscellaneous. Seven items could not be assigned to any of the above categories. These asked such things as how the respondents felt about filling out the questionnaire; how much education they had completed; how their time was distributed across technical and managerial duties; how they felt about jumping from one job activity to another.

Other Measures Obtained for the BI Study

In addition to the responses to the 150 BI Form V items, those people who completed the BI were asked to provide information about their sex, age, starting GS level, current GS level, the year in which they entered the Corps, and the year in which they attained their current GS level. From the year in which their current GS level was obtained, a measure of time in grade was computed; experience was derived from the year in which they entered the Corps; and a measure of promotion rate was obtained by standardizing current GS level by groups, based on length of experience. In essence, this procedure compared the salary history of those who entered the Corps at about the same time. For example, if two individuals entered the Corps at the same time, and one had advanced to a GS-14 level while the other was a GS-12, the former had demonstrated a higher level of managerial ability. Because each experience category -- e.g., promotion rate, time in grade -- was considered separately, the resulting measure, which includes all the categories, would not be expected to correlate with experience.

When the personnel at the Missouri River Division and Omaha District were interviewed to gain a better understanding of the operations of the Corps, as described in Chapter 2, they were also asked to nominate a few people they knew personally -- from either the Division or District level -- who either

had demonstrated ability or demonstrated potential to become an outstanding manager within the Corps. These data were then compiled and several peer nomination measures were developed. The most meaningful measure from the peer nomination data was the binary measure of the person's having been nominated one or more times versus the person's not having been nominated at all. A continuous measure, which was simply the number of times an individual was nominated (zero through four), and a binary measure (nominated two or more times versus nominated one or fewer times) did not prove useful because they did not add anything to the results obtained with the first nomination measure.

The promotion rate measure and the peer nomination measure were both independent indications of ability to function at the higher GS levels. However, because so few people were actually nominated (15 percent of the sample), no known instrument could predict a measure with such small variance. Therefore, peer nomination data could be used best in combination with the promotion rate in a composite, which was a more comprehensive measure of performance. The work of Laurent indicated that this procedure could be fruitful; therefore, the composite measure was computed.²⁶

As mentioned earlier in the main text, the criterion problem -- finding measures which adequately assess performance in a given job or field -- is central to an investigation of this type. Developing such criteria of performance thoroughly for high-level managers and engineers in the Corps of Engineers would require an investigation far beyond the scope of this study. For this preliminary investigation, the promotion rate measure and the composite of promotion rate and peer nomination provided meaningful performance measures which both fit within the constraints of the study and provided a useful analysis of Form V.

The Total Sample Key -- the Biographical Correlates of Overall Managerial Performance

To predict the composite performance measure for the biographical items, the item analysis (described above) using triple cross-validation yielded three scoring keys, each based on two thirds of the total sample. While these keys were very similar, they were not identical. For discussion -- and to yield a key which could be used in any future application of Form V -- a scoring key for the biographical items was generated based on the total sample of 219 employees. While technically this key was not cross-validated, since it was based on the total sample rather than two thirds as were the three cross-validated keys, the total sample key would be more stable than any of the subsample keys. Therefore, it is the most logical key to be applied to other, independent samples. This discussion describes the items within the scoring key and provides information about how the responses of high scoring managers on the performance composite differed from the responses of low scoring managers.

Of the subjective conceptual categories previously described in this appendix, those of Communications, Intelligence, and items derived from the Job Activities Description provided the highest percentages of valid items. For example, from the Communications area, persons with higher managerial performance indicated that several times they had delivered a speech before 50 or more persons, whereas lower scoring managers indicated they never had. High-performing managers described their public speaking ability as very good, while low-scoring managers tended to indicate that their public speaking ability was marginal. More effective managers indicated that, whenever possible, they made broad outlines when writing reports, directives, and manuals, rather than avoiding such paperwork or taking a more active role in writing the actual text. High-performing managers typically responded that writing reports was very easy; low performing managers indicated that it was generally rather difficult. When asked which was the stronger asset, high scoring managers indicated communicating effectively with others as opposed to following through and completing requirements.

Two items assigned to the Intelligence category asked for information about how many activities the person would like to manage at a time. High-performing managers typically indicated that they would like to have many things going on simultaneously. Individuals with low scores on the performance measure tended to indicate that they would rather focus on a few things at a time. The more effective managers tended to describe their ability to think on their feet as very good and also indicated that they would describe themselves more as quick witted, rather than as methodically thorough. When

²⁶ H. Laurent, "Cross-Cultural, Cross Validation of Empirically Validated Tests," *Journal of Applied Psychology*, Vol 54 (1970), pp 417-423.

asked to describe how well they could think under pressure, the more effective managers tended to indicate that they could think very well under such conditions, while the less effective managers tended to indicate that they were about average under such conditions.

As described previously, the items concerned with job activities presented a pair of activities and asked the respondent to indicate in which of the pair he/she was more skilled. For example, one of the questions asked whether the respondent was more skilled in organizing work schedules or in evaluating program outcomes. The relationships of this item with the performance measure indicated that higher performing managers tended to respond that they were more skilled in evaluating program outcomes, while lower performing managers indicated greater skill in organizing work schedules. More effective managers tended to indicate greater skill in developing cooperative relationships with outside groups (clients, special interest groups, etc.); whereas lower performing managers tended to indicate more skill in consulting on complex engineering problems. Other items usually associated with more effective managers were analyzing developmental opportunities for subordinates as opposed to preparing and reviewing cost estimates; leading meetings and discussions rather than organizing reports and manuals; helping others reach a consensus as opposed to writing progress reports or project specifications; and developing long-range priorities, as opposed to preparing and reviewing cost estimates. In general, the analysis of the items from this category indicated that the more effective managers were more skilled in activities requiring a broader perspective, requiring skills more management oriented than technically oriented, and requiring more interaction with people than solitary activities.

Two items from the Achievement Motivation category had significant relationships with the performance measure. The responses to the first of these indicated that the higher performing managers would prefer to have a good deal of responsibility in a job while less effective managers would like to have some responsibility but still have someone responsible over them. Less effective managers tended to respond that they had an average background in several subject matter fields when asked to describe the breadth of their subject matter knowledge.

The more effective managers indicated a greater degree of aggressiveness and interest in implementing new methods, standing up for their own ideas, etc. When asked if they would try to change restrictive regulations or policies which had a negative influence on their work, the more effective managers responded "definitely yes." The more effective managers indicated that they were interested in new methods and encouraged others to alert them to such innovations; less effective managers took a more conservative approach to the implementation of new methods or procedures within the group, perhaps indicating that their first concern was getting the immediate job done.

As expected from the interview discussions, certain interpersonal skills were also important to managerial effectiveness. For example, when asked which was most descriptive of them, the more effective managers responded that they enjoy frequent contact and discussion with many different people, while less effective managers liked working independently. Less effective managers indicated that they would rarely let someone know if they were dissatisfied with that person's work. Less effective managers also tended to respond that their idea of an ideal job was one which would allow them to work by themselves rather than requiring involvement with others. One of the significant item-criterion relationships indicated that the more effective managers would not let getting along with others interfere with higher order managerial duties. The more effective managers indicated that they would more likely be praised for coordinating arrangements and activities rather than their technical contributions or working effectively with others.

When asked about their management abilities, the more effective managers indicated that they were very efficient at coordinating a variety of activities and duties, that they were very good at stimulating productive thought and action in their subordinates, and that they had the most potential in forecasting program development rather than developing project specifications. Managers who appeared less effective on the composite measure tended to indicate that they were about average in coordinating a variety of activities and duties and that they had more potential for developing project specifications than forecasting program development. The number of business or management courses completed since graduation from college was highly related to the performance measure.

The responses to the items in the Management Judgment category indicated a greater willingness of the more effective managers to take an active role in resolving potential conflicts between a group and an outside organization, while the less effective managers would tend to notify

their supervisor and have him/her work out such problems. When asked about their preference for working with clients, the more effective managers indicated that they would assign someone to work directly with the client but contact the client personally as well; less effective managers indicated that under similar circumstances they would work with a client only when it was directly appropriate to do so. Those in between tended to choose the other responses which were "Make frequent personal contacts with clients to establish cooperative relationships" and "Assign someone to work directly with the client to establish a cooperative relationship." Those with higher scores on the performance measure tended to respond that, in general, better managers spend most of their time supervising, concern themselves mainly with indices of production, and work with their subordinates to complete projects. Less effective managers, on the other hand, concern themselves too much with the technical responsibilities of their subordinates rather than with general supervision. The responses to the items in the Management Judgment area indicated a greater willingness to take on responsibility where appropriate, delegate responsibility where appropriate, and allocate time to managerial rather than either technical or "watchdog" duties.

Four of the items from the miscellaneous category had significant relationships with the performance measure. Since the performance indicator used as a criterion for developing the BI scoring key was partially based on GS level, certain items within the BI that assessed or would be expected to relate to GS level, also related to the criterion. When asked to describe the technical versus managerial duties of their current job, the more effective managers indicated that their job was mostly managerial or was divided between both about equally, while less effective managers indicated that their job was mostly technical. The more effective managers indicated that they had classes in the humanities or social sciences while less effective managers indicated that they had taken no such classes since graduation from college. When asked about their level of involvement in the career development of less experienced personnel, the more effective managers indicated that they became very involved in the career development of their subordinates and considered that an important part of their job duties. Less effective managers indicated that they were happy to supply information when a subordinate came to them with questions, but that otherwise their involvement was somewhat limited. When asked about jumping from one job activity to another, the more effective managers indicated that requirement was often stimulating, while less effective managers indicated that they would rather focus their activities.

The results obtained with the Breadth of Experience items produced some rather curious results. For example, on the items dealing with the various divisional functions in the Corps, having more than 3 years of experience in the operations function, having 2 to 3 years of experience in the Research and Development function, or having 1 or 2 years in the Engineering function were each significantly associated with higher performing managers. However, having had 2 to 3 years experience in the Planning function, or having had more than 3 years experience in the Engineering function was associated with less effective managers. It is difficult to understand why a good deal of experience in Operations or Research and Development, or a moderate amount of experience in Engineering is associated with high performance, while a lot of experience in Engineering or 2 or 3 years experience in Planning is associated with poorer performance. These relationships might reflect a problem with the sample used; i.e., the higher level managers in the Omaha District and Missouri River Division might have been drawn from Operations or Research and Development, while people who stay in the Planning function for a long time or in the Engineering function for more than 3 years, tend to stay at lower level positions. The problem may also be one of numbers; i.e., there may be a greater number of people in the Engineering function, and therefore more people would be stabilized in medium or low level positions for longer periods of time.

Of the 20 items dealing with amount of experience in the various functional areas, only 4 had significant relationships with the performance measure. The higher performing managers indicated that they had little or no experience in the specifications/estimates area, but had more than 3 years experience in programming/budgeting, more than 3 years experience in public information/education, or more than 3 years experience in administration/management. The lower performing managers indicated that they had little or no experience in administration/management. When asked in how many of the 20 functional areas they had had 1 or more years of experience, the most effective managers tended to respond that they had such experience in 7 or 8 of these areas, indicating a good deal of breadth.

APPENDIX E:

MANUAL FOR THE INTERVIEWING GUIDE

Introduction

This manual should be helpful in the selection and promotion process for management positions at GS-13 and above in the Corps of Engineers. Interviewing is a complex process requiring sophistication and experience. Though basically the process is used to exchange information, it can contribute to placing a more highly qualified individual into a vacant position, which, in turn, can contribute to organizational effectiveness, to the satisfaction of the individual, and to the satisfaction of the individual's subordinate employees. Therefore during the interview the interviewer should *not* do most of the talking, but should provide ample opportunities for the applicant to talk about his/her capabilities and previous experiences that are relevant to the proposed position.

Preparation for the Interview

Before any interview, some preparation time should be devoted to reviewing relevant facts to be covered during the interview. The better prepared the interviewer is, the more relevant will be the information obtained from the interview. A few important points should be covered before the interview:

1. The interviewer should review the job requirements important for success in the open position. Comments from supervisors or information obtained from job descriptions may be so general that the exact nature of critical activities cannot be discerned. So the critical job requirements might not be adequately covered in the interview unless the interviewer can determine the specific job requirements. For example, a vacancy announcement may have a phrase such as, "capable of communicating effectively," without indicating whether the communication will be oral or written, or both; whether the communication will be predominantly of a technical or managerial nature, or whether the communication will be with the general public, or with Architectural/Engineering firms. Conversing glibly and explaining to a subordinate the demands of a particular plan are two different communications skills.
2. The questions about specific job requirements should generally be asked of every person interviewed. Consistency is equivalent to fairness in this case. Therefore, before the first candidate is interviewed, the interviewer must develop a set of questions that will be asked of each applicant for a given position. This does not mean that relevant, unique characteristics in an applicant's background cannot be explored; however, the key questions covered during the interview should be consistent.
3. Relevant facts about the candidate should be reviewed from the personnel folder. Often, valuable interview time is spent on information available in the person's file. Any additional information about previous experience or the characteristics of the applicant that needs clarification or expansion should be noted for exploration during the interview.

The process of preparing for an interview need not be long, but the preparation can make a substantial difference in both the conduct of the interview and the information gained. Moreover, if the interviewer has prepared for the interview, the applicant will feel that the interviewer is interested in him/her as a person, and will be able to present him/herself better during the meeting.

Conducting the Interview

The interview should be comfortable for both the interviewer and the interviewee. If the interviewer is well prepared, the stage will be set for a relaxed and free exchange of information.

The applicant should be aware of what is expected in the position, but the interviewer could go over this, ensuring that the applicant understands the general job duties, the important job activities, work-unit objectives, and the level of performance expected. If the applicant has no misconceptions about the position, he/she can respond in a more concise and relevant manner to the questions covered in the interview.

In general, a good strategy is to ask open-ended questions which provide an opportunity for the applicant to describe him/herself and his/her experience. Try to give frequent positive remarks whenever the applicant responds in an open, communicative manner. Such comments as "I understand," "yes," or "that's interesting" will help make the applicant feel at ease and direct the applicant toward more complete remarks.

Obtaining relatively complete answers about issues of key importance is a prime concern of the interviewer. In other words, do not hesitate to probe further to gain additional information. Such remarks as "can you elaborate," "in what way," "how did that come about," or "tell me more about this" will help provide information to supplement brief, or in other ways incomplete, or perhaps evasive answers.

If the interviewer is thoroughly familiar with the questions in the *Interviewing Guide*, he/she can use the review of job experience as a natural opening to pursue different questions concerning managerial activities. As opportunities permit, questions can be used from any place in the *Interviewing Guide* that naturally follow from previous comments and fit smoothly into the conversation. With some practice, this is fairly straightforward and easy, as one topic naturally leads to another.

Again, each applicant for a particular position should be given the opportunity to answer the same questions. Both the order and the content can vary to some extent, but there should be some coverage of the *Interviewing Guide's* areas. This will permit the development of scores that help in interpreting the interview results.

The interview should be concluded by summarizing for the applicant the steps to be taken in reaching a selection decision. She/he should be told when a decision will be made and, when possible, provided some information about her/his potential standing. If there are candidates who are clearly more qualified, the interviewer should state that there is substantial competition for the position, and that some of the individuals appear to be particularly well qualified. In any case, the candidate should be promised that she/he will be notified as soon as a selection decision has been made. Finally, the interviewer should conclude by thanking the applicant for considering the position and applying for it.

The Interviewing Guide

The *Interviewing Guide* has three sections: the first concerned with the applicant's managerial competence, the second with job-specific questions, and the third with the interviewer's subjective, overall impressions of the interviewee.

1. **Managerial Components.** The questions in this section are designed to explore the applicant's potential, as well as proven managerial capabilities. Assessing managerial skills may be difficult since the applicant's previous positions may not have provided enough opportunity to develop these skills. Each item in the managerial section contains a general, open-ended question, and short phrases which can be used to record, in part, the interviewee's responses. The phrases are intended to give the interviewer some indication of the types of important responses that should be sought in the interview. As the interview proceeds, the interviewer is to evaluate the applicant on each of the more detailed points listed under the questions. The interviewer should develop his/her own unobtrusive method for doing this, but that system should indicate whether the applicant showed a strength or weakness on the point, was average, or could not be evaluated. For example, the interviewer might use +, -, 0, or blank, respectively, to record the evaluations on each point. After the interview is concluded, the interviewer should make a rating for each of the questions covered in the Managerial Components section. The rating on each of the major questions should carefully consider the evaluations made during the interview on the more detailed points.

2. **Job-Specific Questions.** The specific technical requirements of the job should be written in the space provided. Specific requirements are not preprinted on the form because of the complexity of the engineering positions in the Corps. Space is provided for rating the applicant's remarks about his/her competence in key job requirements and summarizing the applicant's experience and judged capability for each of the key job requirements. The rating can be checked off during the interview, but there should be enough documentation of the remarks so that the material can be reviewed later.

3. **Interviewer's Impressions.** This portion of the *Interviewing Guide* contains items that the interviewer is to answer after the interview has concluded. These are relatively subjective ratings on

the part of the interviewer, and are based on his/her impressions during the interview. Nonetheless, these impressions can be important indicators of the potential of the individual and should receive attention during the selection process.

Scoring of the Interview

The items in the Technical Job Requirements section, the major questions covered in the Managerial Components section, and the items of the Interviewer's Impressions section are all to be scored with the following scale:

- Blank = Insufficient evidence, applicant cannot be rated
- 1 = Marginal competence
- 2 = Some potential, further development needed
- 3 = Satisfactory competence
- 4 = Very satisfactory competence
- 5 = Outstanding capability.

The numerical rating for each item should be marked in the space provided. Throughout this rating process, the interviewer must take care that each score consider only the item at hand and not an overall feeling about the interviewee. No applicant should be rated at the same level on all items. Therefore, the interviewer should observe carefully the strengths and weaknesses of all applicants.

The total of the ratings for each section is entered at the end of the section, and, to obtain the average, is divided by the number of items on which the sum is based. This division is done so that the applicants can be compared more readily. An applicant should not be penalized if insufficient evidence is available for the interviewer to make a rating; therefore, blanks are not counted in the computation of the average.

An overall score for the applicant can be obtained by totaling the average scores obtained for each of the three sections. Space for this is provided on the last page of the form.

Summarizing the Results

The interviewer should summarize the key remarks that will help document what happened during the interview. This should probably be done shortly after the interview has concluded. Any questions that need further follow-up (with the applicant's present supervisor, coworkers, etc.) should also be noted.

Using the Results

After all the interviews with potential employees have been held, applicants can be compared on the basis of the scoring system devised for the interviews. However, selecting the person to fill the position solely on the basis of the interview would be ineffective and a misuse of the interview. The information gained from this process should be used in combination with all the other sources of information to make the selection. The interviewer should be aware that some individuals do not come across well in an interview, or that an individual might respond much better at another time. The interviewer should also be aware that she/he functions better on different occasions, and this, too, might have an effect on the results.

The use of a structured interview can be an asset in the selection process because of the kinds of information that might not be available in any other way. The individual is the best source for certain information about her/himself, and the interview, if structured correctly, can help obtain this information.

APPENDIX F

FEEDBACK OF MAS RESULTS

The system offers two kinds of scoring information: a percentile rank score and the criterion-referenced score (percent favorable), so that both comparative and absolute information are available to facilitate effective interpretation of the results. After the screening process is completed, the MAS system provides each supervisor of five or more employees a computer-generated feedback report describing -- in terms of achievements and opportunities for improvement -- the state of human resource management for his/her work group. Higher levels of management receive two feedback reports -- one from subordinate supervisors (if there are five or more) and a combined report for all employees subordinate to him/her.

Percent Favorable Scores

Results in Table F1 show the percent favorable scores in the two columns on the right side of the page. These scores show the actual percentage of favorable responses chosen by employees to describe characteristics of management in their organizational unit. The column titled COMPONENT is the group of scores for the *total* organization; the column titled ORGANIZATION is the group of scores for the data base (in this case all three Corps sites) which the component is being compared against. In the event that an organizational unit has 25 or more employees -- e.g., a division like Engineering or Operations -- the unit will also get a column of scores titled UNIT.

The percent favorable scores are typically built on the two most favorable responses for each question. The number of positive responses chosen across the questions in a score area is shown as a percentage of the number of positive responses as possible for that area. For example, in the Table F1

Table F1
MAS Feedback

MAS RESULTS FOR U.S. ARMY CORPS OF ENGINEERS
ORGANIZATION CODES WHICH BEGIN WITH _____
6 EMPLOYEES INCLUDED

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SCORE		PERCENTILE RANK OF UNIT SCORE IN RELATION TO SCORE OF:		PERCENTAGE OF FAVORABLE RESPONSES	
		ORGAN- IZATION	COMPONENT	COMPONENT	ORGAN- IZATION
1	Fairness of Management	60	59	68	65
2	Delegation of Authority	24	35	50	60
3	Supervisory Effectiveness	15	26	51	62
4	Planning & Administrative Efficiency	13	27	25	40
5	Climate for Innovation	40	35	49	48
6	Work Satisfaction	39	44	64	64
7	Training Effectiveness	39	38	43	43
8	Performance Feedback	27	34	30	37
9	Equal Opportunity for Women	60	54	64	61
10	Equal Opportunity for Minorities	49	51	67	67
11	Opportunity for Promotions	31	42	20	30
12	Downward Communication	34	36	57	58
13	Upward Communication	34	40	41	46
14	Satisfaction with Pay	26	32	32	38
15	Morale	25	35	38	47
16	Physical Working Conditions & Equip	71	69	57	54
17	Co-Worker Cooperation	41	46	69	70
18	Operational Efficiency	55	54	73	70
19	Workload Balance	14	17	29	17
	96% Understaffing Responses				
	0% Overstaffing Responses				

the total Corps of Engineers sample received a 65 percent favorable score for Fairness of Management. This indicates that the Corps employees chose 65 percent of the favorable responses to describe the Fairness of Management across all three Corps sites. At the organization where this feedback form was sent, the percent favorable score was 68, indicating that the employees at this one Corps site were more positive than the total Corps sample about the Fairness of Management in their own organization.

An examination of the scores for a single organization reveals a variable pattern of scores across the management areas. While some organizations may tend to have somewhat high or low scores, no organization has only high or only low scores. For example, in the organization represented in Table F1, the highest score was a 73 on Operational Efficiency and a low score of 20 on Opportunity for Promotions, with many scores in the 40s, 50s and 60s. This same variation across score areas can be seen for any organization.

Percentile Rank Scores

This scoring method takes into account positive, neutral, and negative responses and permits the supervisor to see how well a particular unit did in comparison with all the units in the organization. In this scoring method the total organization is always the 50th percentile. If a unit has a score of 50 or better in any management area, that unit scored as well or better than the average of all the employees in the organization. These scores are presented in the two left-hand columns on the feedback report. In the column titled ORGANIZATION are the scores for the entire, single organization but *not* for all three Corps sites. The next column titled COMPONENT presents the scores for the organizational unit in which the six employees work (such as a section, team, branch).

The supervisor looks at the scores for the organization and compares his/her component scores to them. For example, in Delegation of Authority, the percentile rank of the entire organization was 24, whereas the score for the supervisor of this particular unit was 35, or 11 percentile points higher than the organization.

These are comparative scores, primarily used by individual managers to see how they compare with the entire organization. Any scores within the range of 40 to 60 generally should not be considered either particularly high or low since they are close to the organization's average. Scores in the 30s are potential red flags and should be noted as areas needing improvement. Scores lower than 30 -- particularly those in the teens -- indicate severe problems.

Interpretation of the MAS Scores

Since the two scoring systems provide different information, each can be looked at individually but provide more complete information when examined together. The percentile rank score provides comparative information on how a unit is viewed by employees relative to all the units in the organization. The percent favorable scores show the actual percentage of favorable responses made by employees in the organization.

In analyzing the two scores, the supervisor should look first at the percent of favorable responses. If the percentage for the unit is low in a given management area (for example 30 percent), the supervisor should devote some attention to that area. Even if the unit were somewhat above average on percentile rank, improvement would still be needed because of the low percentage of favorable responses.

On the other hand, if the percent favorable score for the unit is high (70 percent or higher), then a relatively low percentile rank score for the unit may not be a cause for concern. The overall level of achievement might be so high in the organization that a low percentile rank might be caused by the high overall standing of the organization rather than dissatisfaction within a particular work group.

The supervisor must review the results obtained and decide which, if any, of the management areas need attention. Whether any attention should be devoted to a particular area would depend on the score obtained and on the importance of the score area to overall effective performance in the unit. Only a few areas should be selected for improvement since changes in a large number would be difficult to achieve within a reasonable period of time. Generally speaking, areas of greatest concern will be those in which the work group has less than 50 percent favorable responses and for which the unit falls below the organization's average.

APPENDIX G:

USING THE MANAGEMENT SURVEY ACTION PLAN

The MAS has been administered to over 30,000 employees in various governmental and industrial settings and has demonstrated significant relationships with productivity of work units in certain governmental operations. That is, as the MAS scores of a unit increase, the productivity of the unit also increases. The MAS can generally be expected to provide valid and reliable information and to help identify problem areas. A crucial step in increasing productivity and employee satisfaction is the development of an action plan to correct those areas in which there are opportunities for improvement. Since information from the MAS is helpful only if the supervisor acts upon it, the purpose of the action plan is to help promote effective use of the information.

The sample Action Plan completed in Table 11 shows how a supervisor used the MAS computer feedback results in an attempt to improve the management practices of his/her work group. An Action Plan would differ for each individual work group, depending on the particular needs and objectives of the unit. However, the supervisor should consider, as a minimum, each of the steps listed on the sample Action Plan.

The process outlined in the various steps should be repeated for each problem area identified for the work group. Typically, not more than three problem areas should be considered for action plans. Attempting to improve more areas would tend to spread the effort too thin, require more time than is available, and decrease the probability that the effort would be successful.

1. **Definition of Problem and Related MAS Scores.** The supervisor should look very closely at the scores on his/her feedback report to determine any areas of concern. These may be the lowest scores, or may be scores that are not as high as the supervisor thinks they should be. Some low scores may not be within the supervisor's power to change, or may not be in an area important to the function of the work group. In making this determination, the supervisor should consider everything that he/she knows about the work group -- the personnel, the objectives, the situation. Employees can usually offer a variety of helpful suggestions for defining and solving problems within their work group. The MAS will help identify problem areas, but to help further define the problems, the supervisor may want to obtain from the *Handbook for Supervisors* a list of the other MAS scores that are highly related to the score of concern.

2. **Task Group Formed.** The next step is to decide whether a task group is needed to recommend new activities, alter procedures, delegate authority, or change work assignments to improve the problem score area. The task group would be composed of knowledgeable individuals within the organizational unit, and, if appropriate, individuals from other groups which work with the unit in question. Resource people who can provide specific types of assistance can also be consulted. The ideal would be to develop a systematic approach to problem solving by calling on a knowledgeable and dependable group of consultants. The task group will typically include some individuals who have the authority to implement the Action Plan, and some employees who will be affected by the plan. However, the group should be no larger than necessary, and should establish early reporting dates.

3. **Problem-Solving Activities.** The supervisor and/or the task group, if formed, should next formulate new activities and possible solutions that are appropriate to the problem and to the objectives of the work group. A resource for this part of the process is the section of the *Handbook for Supervisors* devoted to the problem area or score of concern. This section should be used to find possible action strategies that could improve management performance. The sections for the related MAS score areas should also be consulted. The action strategies listed should give the supervisor and/or the task group ideas about how to attack the problem. The alternate strategies should be discussed, and some priority should be assigned to each. The supervisor has to decide for him/herself which of the activities are to be implemented.

4. **Planned Follow-Up.** The MAS Action Plan should have a built-in program for supplying to the supervisor and/or the task group information about the impact of the problem-solving activities on the problem areas identified. This information can be sought in meetings with the entire work group, in individual sessions with members of the work group, or in periodic written reports. Such feedback

will tell the supervisor and/or the task group how effective the problem-solving activities have been and whether further changes need to be made.

5. Responsibility. This portion of the MAS Action Plan lists the person(s) responsible for seeing that the problem-solving activities are carried out, for evaluating the results of implementing the activities, and for making any further changes in the action strategy. Typically, unless someone has this responsibility, the change will not be effected.

6. Resource People. The supervisor is encouraged, whenever difficulties are encountered, to use resource people within the organization -- people from Training, Management Analysis, Personnel, etc. These individuals can use their special training and experience to help resolve problems, and can also provide information, consultation, support, and other services to promote more effective management practices.

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